

## PC-based Controllers & I/O Modules

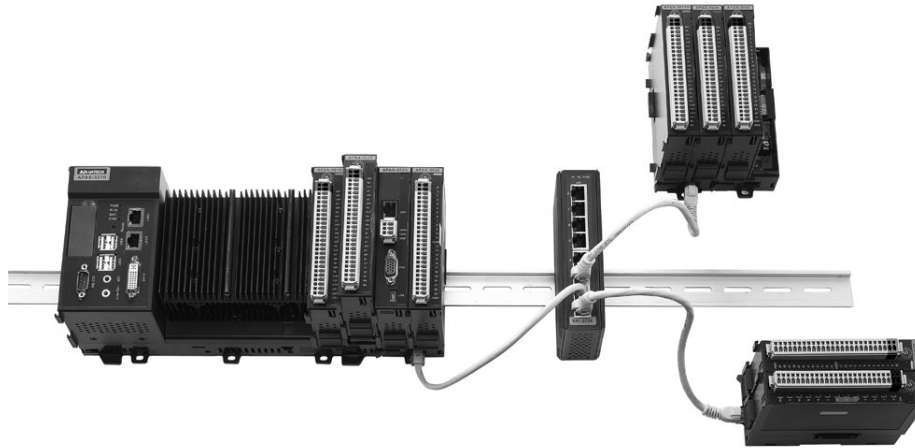
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# APAX Series Overview



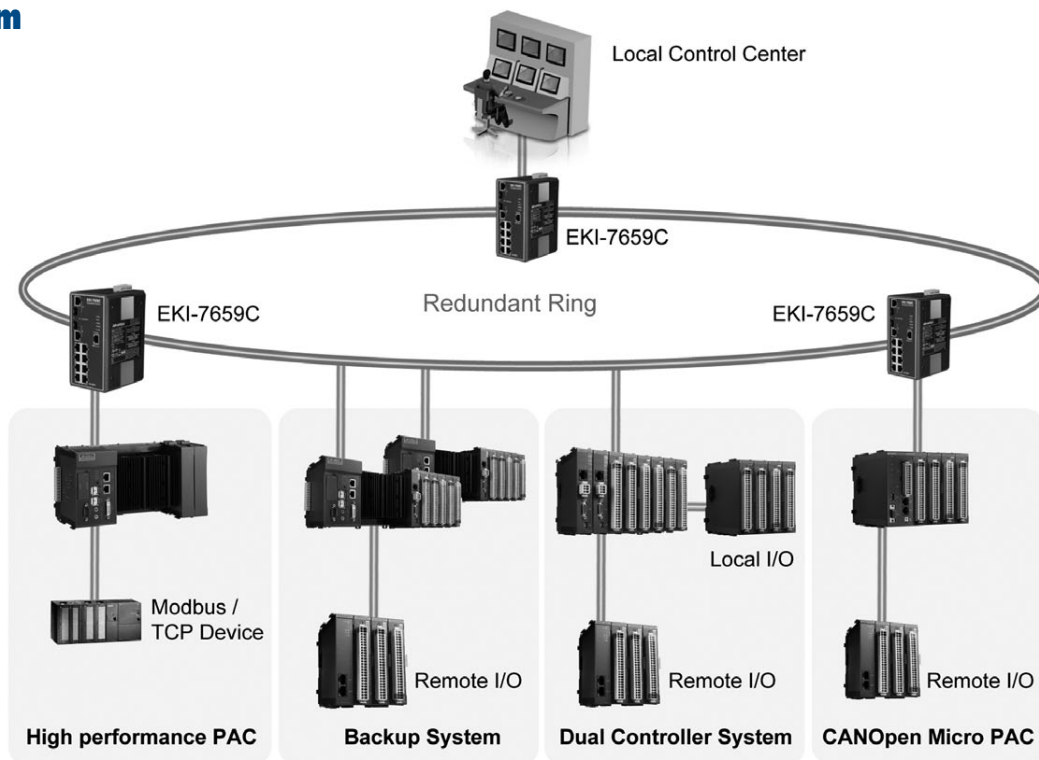
## Introduction

APAX-5000 series are designed for industrial automation and combine the openness and flexibility of PCs with the reliability of PLCs. APAX-5000 utilizes a sophisticated thermal design to ensure the system stability. Due to the dual thermal pipes inside the heatsink, the thermal dissipation capability can keep the system working under high computing by integrating multiple tasks in one platform. APAX-5000 offers SD memory for data logging purposes and two custom expansion slots with PCI bus signals reserved for the integration of 3rd-party products.

APAX-5000 series is fully Ethernet-enabled which allows users to deploy the I/O modules in many combinations, like direct stack or daisy chain. APAX-5000 series supports both DIN-rail and wall mounting which makes the installation very flexible. Furthermore, all APAX-5000 I/O modules comply with high noise immunity, just like a standard PLC. The user-friendly design of this series also includes slice I/O, high density I/O with LEDs, hot-swap and stackable functionality.

As a next-generation of PAC, APAX-5000 offers C/C++ and .NET library and IEC 61131-3 language as programming tool. Furthermore, in order for system integrators to easily build up the application-level software, APAX-5000 series would fully support Windows CE and Windows XP Embedded. The following diagram shows the system architecture in a typical industrial application.

## Diagram



### CPU Module Scalability

The APAX family offers various CPU modules with different processors in order to meet different requirement of control tasks.

- APAX-6571: Intel Atom CPU, 1.6 GHz processor
- APAX-5571: Intel Celeron M CPU, 1.5 GHz processor
- APAX-5570: Intel Celeron M CPU, 1 GHz processor
- APAX-5520/5620: Intel XScale PXA270, 520 MHz processor

### System Composition

APAX-5000 series consists of power modules, CPU modules, couplers and I/O modules. All I/O modules inserted on the backplanes can be stacked together and connected to CPU modules or couplers to form a complete system. With the 1-slot or 2-slot backplanes, users can select the appropriate I/O number depending on their need.

### Flexible Topology for Expansion

APAX-5000 I/O modules are connected together via Ethernet bus. Each backplane offers one expansion port. Using a standard Ethernet cable to connect the expansion port on two backplanes, a remote expansion with local-bus speed is built, and the distance can be up to 100 m. In addition, any standard Ethernet switch can be used between two backplanes. Therefore, you can build line, tree or star topologies for I/O expansion --- all with fast local-bus speed. The implementation of Ethernet switches not only enhances the flexibility of I/O expansion, it also increases the expansion distance. For example, if there are 3 Ethernet switches between two I/O stations, the expansion distance can be at least 400 m. (When fiber optic ports are available on the Ethernet switch, the distance can be much longer.)

### High Density and Deterministic I/O

Up to 24 digital channels or 12 analog channels are provided on single module. With such high density I/O numbers, the update time for data from 32 digital input modules (up to 1536 digital input channels) can be guaranteed. The update rate is also guaranteed to transfer data to 32 digital output modules (up to 1536 digital output channels). This feature ensures system real-time ability.

### Hot Swap I/O Design

Backplanes carry communication and power to I/O modules. This design makes the I/O modules able to be hot swapped when the system is powered-on and running. Engineers can easily change modules without shutting down the whole system. This saves the system management and troubleshooting costs.

### Intelligent I/O Module

APAX-5000 I/O modules can execute on-module processing and calculation, allowing them to become intelligent I/O modules. Controlling LED status to display module information or digital filters are a couple examples of leveraging the extra processing capacity.

### Reliable Clamp Type Terminal Blocks

All APAX-5000 I/O modules offer clamp type terminal blocks. Compared to traditional screw type terminal blocks, clamp type terminal blocks can save wiring time up to 75%. Clamp type terminal blocks have higher resistance to shock vibration, without wire damage or measurable contact interruption. Besides, clamp type terminal block connections don't require checking or retightening, which helps save wiring maintenance costs.

### Software Support

APAX-5000 series software support can satisfy both PC-based and PLC-based programmers. The C/C++ and .NET class library can satisfy the programmers who are familiar with high level programming languages using Microsoft Visual Studio .NET. The PLC-based users can leverage KW-Software Multiprog which supports IEC 61131-3 compliant PLC programming languages.



APAX-5570



APAX-5520



APAX-5343



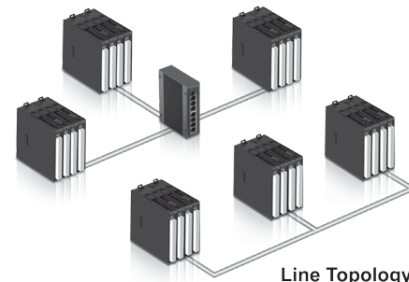
APAX I/O Modules



APAX-5002

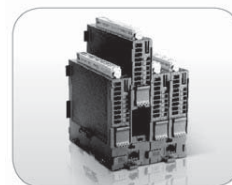
### APAX Series System Composition

#### Star Topology

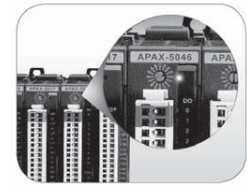


#### Line Topology

#### Flexible Topology



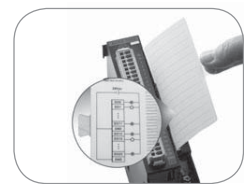
Hot Swap I/O



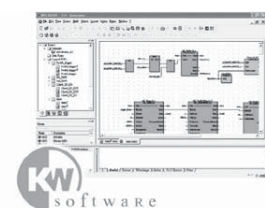
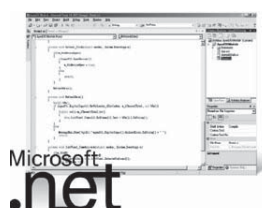
Intelligent I/O Module



Clamp Type Terminal Blocks



Writable Labels with Wiring Information



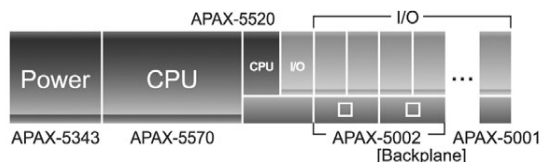
# APAX System Architecture

## Introduction

To simplify the system configuration, Advantech's APAX-5000 series provides an easy and flexible way to setup different functions and configurations. There are multiple APAX series system combinations that can be selected to develop reliable control systems as detailed below.

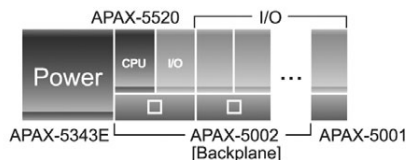
## Application Ready High Performance PACs

Advantech's APAX-5570/5571/6571 series offers several high performance controllers with Atom and Celeron M grade CPUs. These controllers benefit from the high throughput, openness, flexibility and connectivity brought by PC-based architectures. Contributed by excellent heat dissipation technology with no hard disks, they deliver great system reliability. Various peripheral interfaces such as LAN, USB, DVI, audio, RS-232, RS-422/485, etc, are provided. These high performance PAC controllers are suitable for many complex control applications.



## Robust, Compact PACs

APAX-5520/5620 series controllers offer a compact size without fans. These controllers have no rotating parts, helping further increase system reliability. APAX-5520/5620 features a VGA interface, enabling local displays, and its RS-485 and LAN ports offer communication ability with Modbus protocol. Internal CF slot and battery backup RAM can be used for data storage. These features make APAX-5520/5620 as compact and robust as a PLC, but with enhanced displays, connectivity, and storage.

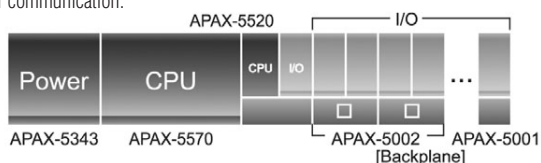


## Unique and Dedicated System with Dual Controllers

APAX-5000 series features a unique system architecture, two individual controllers executing different tasks, integrated into one platform. One controller focuses on I/O control processing while the other controller possesses high computing performance to be responsible for tasks like database, HMI/SCADA software, recipes, communication, storage, vision processing, and more.

For example, APAX-5570XPE can be one controller delivering powerful computing ability and sufficient resources to execute all other tasks except I/O processing. Another controller could be APAX-5520KW, concentrating on I/O control. For many control applications, I/O control is critical, and this dual controller architecture offers excellent reliability and efficiency. Regardless of what happens on the APAX-5570XPE (even if the operating system crashes), I/O control process is still secure.

Any application running on APAX-5570XPE, such as HMI/SCADA software, can access data from APAX-5520KW through Modbus protocol. HMI/SCADA software that supports Modbus clients can link to Modbus servers on APAX-5520KW to get data. Advantech offers related libraries for programmers. This can significantly save a lot of development time for communication.

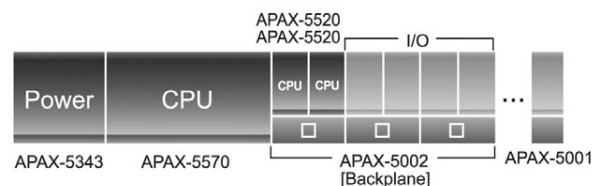
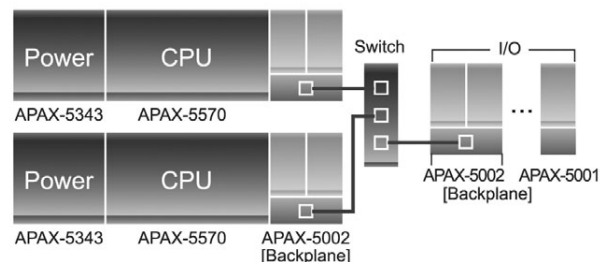


## Reliable Control System with Backup Technology

APAX-5000 series delivers system backup functionality to significantly decrease the risk that the system will fail when the controller crashes. To leverage this, two controllers with the same control program are installed in one system. After both controllers' backup functions are enabled, APAX-5000 will automatically delegate one controller as the master controller.

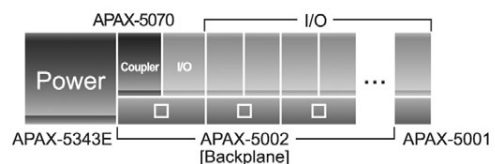
The master controller will run the control program to execute the control process, while another controller (the backup controller) is put on standby. The master controller periodically sends live messages to the backup controller. If the backup controller does not receive a message from the master controller, it will automatically become the master controller and restart the control process.

If the master controller is switched, it means there was an error happening on the previous master controller. Therefore, engineers can repair or change the previous master controller and re-enable it as the backup controller. Then if the new master controller fails, the new backup controller will automatically take over the control once again. This mechanism ensures the control system will continuously run the control process.



## Scalable Systems with Remote I/O

For different fieldbus or real-time Ethernet networks, such as Modbus, Ethernet/IP, Profinet, etc, APAX series offers different kinds of couplers for communication. Any controller or computer in the same network can access APAX I/O modules through the coupler. Not having to change I/O modules for different fieldbus or real-time Ethernet networks helps ensuring current I/O modules' investment for future demands. These couplers feature daisy-chain design, making installation easier.



# Software Tools for PC-based Solutions

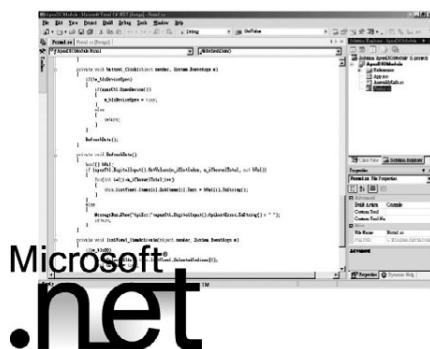
## PC-based Programming Software

Advantech PAC offers the seamless software integration for automation application. Regarded as SoftPLC, Advantech PACs not only leverage KW-Software including LD/FBD/IL/ST and SFC, but also empower many application-oriented & practice-oriented function blocks to different domain fields, such as batch control for food/beverage, auto-tuning PID for temperature control in EFMS, PLCOpen-compliant motion control blocks for a variety of trajectory control and positioning purposes in machine automation. Multi-tasking, runtime error reports and operating mode changes are also possible for PAC applications.

For PC-based users, Advantech also offers the .NET function library. System integrators can benefit from flexibility to integrate I/O control, motion control, industrial communication protocols and data process/exchange, database access, HMI interface and SCADA. Plenty of C/C++ and .NET examples save programmer learning time, helping save programmers' development effort and shortening time to market.

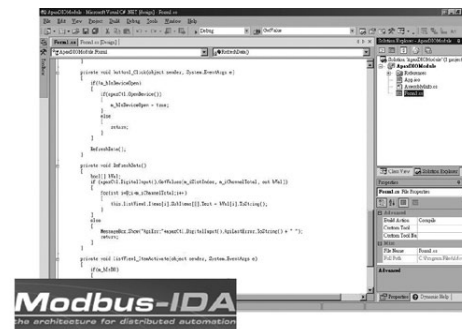
## .NET and C/C++ Library

Advantech's PAC series solution offers a complete PC-based platform with Application Programming Interface (API). With C/C++ libraries and .NET class libraries provided by Advantech, PC-based programmers can develop their own programs for industrial control and automation tasks, involving I/O control, system backup function, communication, SQL and scheduling, even integrated with HMI/SCADA interface.



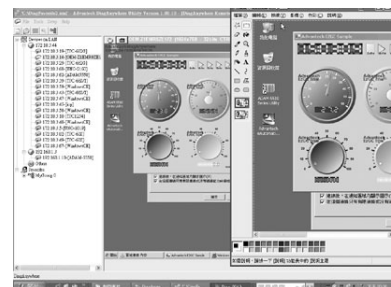
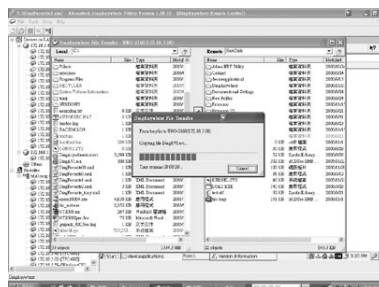
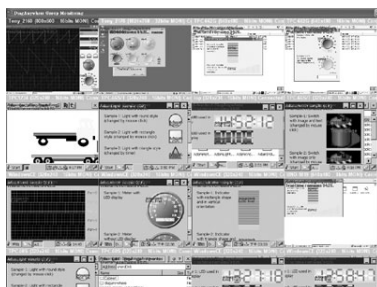
## Modbus Server

Advantech's PAC series offers Modbus/RTU and Modbus/TCP for data exchange purposes. Taking Advantech's next generation PAC (APAX series) as an example, any 3rd party HMI/SCADA software running in APAX-5570XPE can access data from APAX-5520KW through Modbus/RTU or Modbus/TCP. Advantech offers a series of API, including Modbus server/client configuration, easy data access function and callback function for multithread event handling. Plenty of samples programs can help you to easily set up the Modbus communication.



## DiagAnywhere – Remote Maintenance Software

DiagAnywhere, an abbreviation of "Diagnostic Anywhere", is a networking solution for remotely monitoring and controlling APAX controllers through Windows-based operating systems. It includes the utility on the client side and the server on APAX controllers. Any computer installed with the utility can connect to APAX controllers, seeing what's happens on the controller and performing remote control. It is very convenient that the engineer doesn't need use a screen to operate the controller in the field, and allows them to maintain the system on the remote site. One DiagAnywhere client can monitor and control up to 16 target controllers simultaneously. This useful software tool also supports remote screen snapshots, remote screen recording, file upload and download between utility (on the client computer) and server (APAX controller), favorite devices grouping to manage system more easily, and authentication functionality. All these features help users save maintenance cost and effort.



# SoftLogic and HMI Software

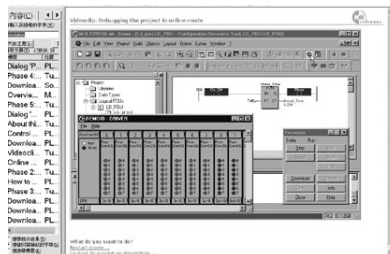
## SoftLogic Programming Software Introduction

In automation control market, IEC 61131-3 becomes an international standard control language, Advantech's APAX-5000 series leveraged a programming software which is called Multiprog running on Window OS. It not only provides normal programming tools, but also leverages advanced testing and debugging tools. In addition, Advantech has designed more advanced function blocks to increase the convenience of customers and fulfill more application needs.

## Advanced KW Tools & Function Blocks

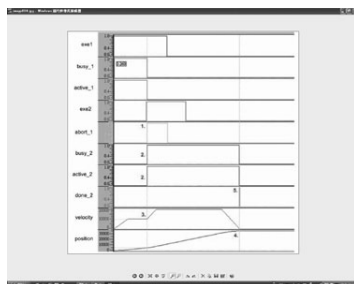
### Offline Simulation Tools

Program simulation is the best debug function for software developer. Before the program is downloaded into the controller, programmers can use this function to simulate programs. The easy-to-use 32 bit simulation offers fast and real-time multitasking test environment. The picture below is the simulation tool function and program with I/O status monitoring. Programmers can set the simulation value to AI or DI channels for checking the program before downloading.



### Logic Analyzer

The Logic Analyzer is a powerful tool for recording variable values in online mode and representing them in a graph. Using the results delivered by the analyzer, you can evaluate if the program runs as expected.



### Advanced KW Function Blocks

Advantech provides various function blocks (FBs) to fulfill any kind of applications. There are more than 30 additional FBs, designed by Advantech and can be categorized into two groups. One is I/O access FB, including AI/O read/write FB, DI/O read/write FB, and I/O error FB which is used for system diagnostic function. The other is advanced tool FB. Here are some example:

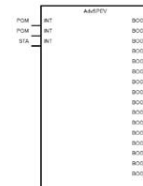
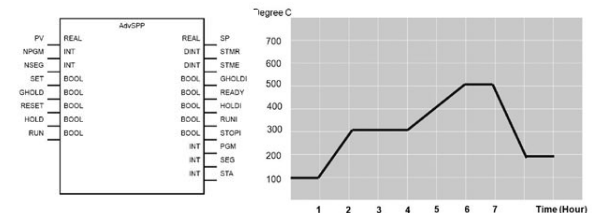
1. SQL database FB: Used for data log and analysis
  2. Scheduling FB: Used for time scheduling control in building automation and devices schedule control application
  3. e-mail FB: Used for event notification and remote service application
- You can refer to the KW function block user manual for more detail.

## Process Control Function Blocks

### Batch Control Function Blocks

The typical batch control application markets includes food & beverage, furnace, biochemical, pharmaceutical, etc. The major control functions of batch applications are ramp/soak, recipes, PID auto-tuning and batch reports.

The AdvSPP function block is used for Setpoint programmers (SPP). This function perform ramp/soak curve generation. The AdvSPEV function block can trigger batch control event, by directing the output status to digital output channels or part of control logic. This function block supports 16 events per segment basis.

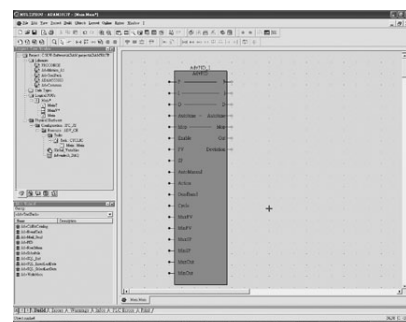


Segment	Type	SP Value	Time/Rate	Ass. Out	Over Hold	Is
1	Ramp	100	2	0	OFF	00000000
2	Soak	300	2	0	OFF	00000000
3	Ramp	500	2	0	OFF	00000000
4	Soak	500	2	0	OFF	00000000

### Auto-tuning PID

The PID function blocks provides auto-tuning functionality. This function block makes use of Proportion, Integral, and Derivative calculations to provide a control cycle function to implement modulation control, and automatically find the optimized P, I, and D parameters.

Using this control function, user can save more time on process control commissioning duty. The totally recommended PID are 32 loops, depending on customer's process application. For the flow and pressure control applications, we recommended up to 16 PID loops.

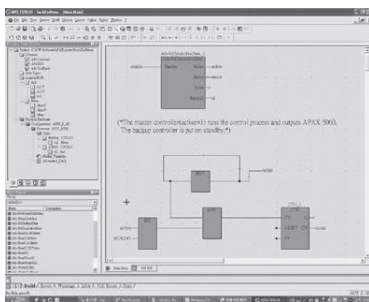


## Enabling Project Efficiency

### System Backup Functions

APAX-5000 series delivers system backup functionality. To leverage this functionality, two controllers with the same control program, are installed in one system. After both controllers' backup function is enabled, the APAX-5000 system will automatically delegate one of the two controllers as the master controller.

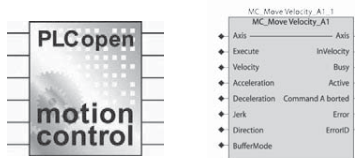
The control program should use the function block "AdvRdSysActiveState" to know if its controller is the master controller currently, by the parameter Value. If the Value responses "True", it means the controller is master controller, then the program should execute the control algorithm. If the Value responses "False", it means the controller is backup controller, then its program should do nothing, and simply checking if the master controller is still alive periodically. When it detect the master controller is lost, it should executing the control algorithm, making it become the master controller.



### Motion Control

#### PLCopen for Advantech PAC

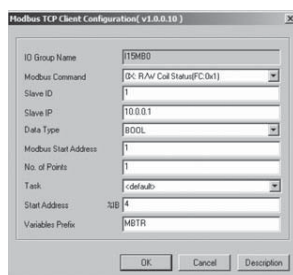
Advantech offer motion function blocks which follow PLCopen standards. They can help system integrators to easily perform point-to-point moves, continuous moves, linear and circular interpolation and homing functionality. With the PLCopen-compliance FB, system integrators can benefits from reduced hardware cost and fully utilizing PC's high computing ability. The programmed application can be migrated to different hardware platforms in another machine development cycle.



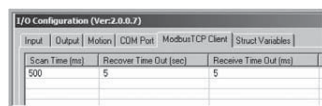
#### Modbus Driver

Advantech has provided an interface to monitor and control tags. This interface is accessible via Modbus/TCP as well as Modbus/RTU. The APAX controller can be treated as a Modbus Slave.

The APAX Controller reserves approximately 128K Bytes memory space for Modbus use. This shared memory block can store user's data and exchange the data through Modbus/TCP and Modbus/RTU protocol with a HMI/SCADA software.



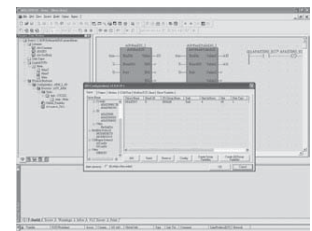
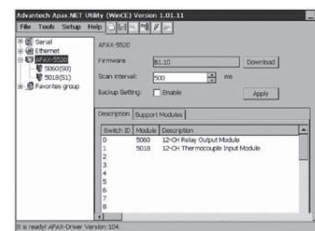
Modbus TCP Input



Modbus/TCP Client General Settings

### Utility for Advantech PAC

Each Advantech PAC controller has a built-in utility. System integrators can browse what modules are connected from the tree view interface. For different I/O modules, you can test I/O functionality, debugging if the module can work normally or not, and pre-setting some preferable parameters, such as type and range for analog I/O modules. Even you choose IEC 61131-3 programming tool, Advantech also provides the easy-to-setup window-type configuration tool under KW's SoftLogic software. It's quite helpful for integrators before starting to program the whole system.



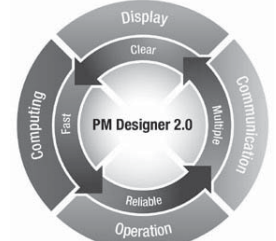
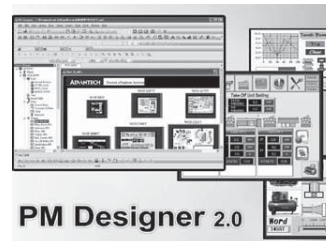
### HMI Software

#### PM Designer 2.0

##### HMI Runtime Development Software

PM Designer is powerful yet intuitive software to create total solutions for Windows XP, XPe and CE OS platform products. PM Designer is an easy to use integrated development tool. The features include solution-oriented screen objects, high-end vector graphics, Windows fonts for multi-language applications, recipes, alarms, data loggers and operation logging. PM Designer also includes online/offline simulation and other utility programs such as Data Transfer Helper (DTH); recipes editors and text editors (Refer to 1-2).

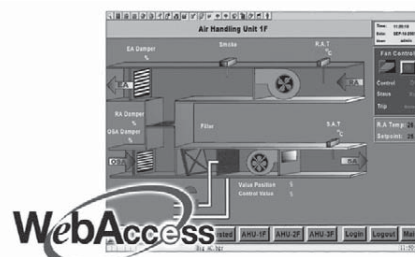
Panel Express runtime, a part of PM Designer, guarantees reliability and performance of WOP Series HMI & APAX 5000 PAC controller because of the minimum system overhead, high communication data rates, sub-second screen switching, and 24/7 operation.



#### Advantech WebAccess

##### Browser-based HMI/SCADA Software

Advantech WebAccess is browser-based software package for human-machine interfaces (HMI) and supervisory control and data acquisition (SCADA). All the features found in conventional HMI and SCADA software packages are available in an ordinary browser including Animated Graphics Displays, Real-time Data Control, Trends, Alarms and Logs. WebAccess is based on standard Internet architecture, its basic components include SCADA Node, Project Node, Client and Thin Client (Refer to 2-4).



# APAX Controller Selection Guide



System	APAX-5520CE	APAX-5620CE	APAX-5570XPE	APAX-5571XPE	APAX-6571XPE
CPU	XScale PXA270 520 MHz		Celeron M 1 GHz	Celeron M 1.5 GHz	Atom 1.6 GHz
Memory	Flash 32 MB, SDRAM 64MB		512 MB DDR2 DRAM		1GB DDR2 SDRAM
Storage	1 x CF slot (internal)		1 x SD card slot		1 x CF slot (internal)
Local Display	VGA		DVI-I		DVI-I
USB Ports	1 x USB 1.1		4 x USB 2.0		2 x USB 2.0
Audio	-		Mic in, Line out		Mic in, Line in, Line out
Cooling System	Fanless		Fanless	with Fan	Fanless
Power Input	18 ~ 30 V <sub>DC</sub>		18 ~ 30 V <sub>DC</sub>		10 ~ 30 V <sub>DC</sub>
Diagnostics LED	Power, Battery, Run, Error				Power, Battery, IDE, Over Temperature Alarm, 4 x Programmable LED
Real-time Clock	Yes				
Watchdog Timer	Yes				
Operating System	Windows CE .NET	Windows CE .NET	Windows XP Embedded	Windows XP Embedded	Windows XP Embedded
Control Software	C/C++ library and .NET class library for C and .NET programming environment				
Local Real-time I/O Modules	32 (max.)*				
Digital I/O Points	2048 (max. )				
Analog I/O points	512 (max. )				
Communication (Ethernet)					
LAN Ports	1	2	2	2	2
Speed	10/100 Mbps		10/100/1000 Mbps		10/100/1000 Mbps
Protocol	Modbus/TCP				
Communication (Serial)					
COM 1	RS-485	RS-485	RS-232	RS-232/422/485	
COM 2	-	RS-485	RS-422/485	RS-232/422/485	
CANopen Ports	-	2	-	-	
Protocol	Modbus/RTU, CANopen (APAX-5620CE only)				
Isolation					
Communication	2500 V <sub>DC</sub> (RS-485)	2500 V <sub>DC</sub> (CAN & RS-485)	2500 V <sub>DC</sub> (RS-422/485 only)		-
Environment					
Operating Temperature	-10 ~ 55° C (when mounted vertically)				-10 ~ 50° C
Storage Temperature	-40 ~ 70° C				
Relative Humidity	0 ~ 95 % (non-condensing)				
Vibration Protection	IEC 60068-2-64/60068-2-6: 1 Grms @ 5 ~ 500 Hz (Random, operating) 2 G @ 5 ~ 500 Hz (Sine, non-operating)		IEC 60068-2-64/60068-2-6: 2 Grms @ 5 ~ 500 Hz (Random, operating) 2 G @ 5 ~ 500 Hz (Sine, non-operating)		IEC 60068-2-64 IEC 60068-2-6: 2 Grms @ 5 ~ 500 Hz (Random, operating) 2 G @ 5 ~ 500 Hz (Sine, non-operating)
Shock Protection	IEC 60068-2-27: 20 G @ wall mount		IEC 60068-2-27: 30 G @ wall mount		IEC 60068-2-27: 50 G @ wall mount
Power Supply Module (optional)	APAX-5343E		APAX-5343		PWR-343
Page	20-12	20-13	20-14	20-14	20-16

\*: APAX DI/O modules can use ID numbers 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

# APAX Communication and Motion Module Selection Guide

## Coupler Modules



Module Name		APAX-5070	APAX-5071	APAX-5072
Description		Modbus/TCP Communication Coupler	Profinet Communication Coupler	Ethernet/IP Communication Coupler
Communication	Protocol	Modbus/TCP	Profinet	Ethernet/IP
	Data Transfer Rates	10/100 Mbps	100 Mbps	10/100 Mbps
	Connected I/O Modules	32 (max.)*		
	Digital Signals	2048 (max.)		
	Analog Signals	512 (max.)		
General	Connector	2 x RJ-45 (2-channel switch, share same IP address)		
	Topology	Line or star wiring		
	Operating Temperature	-10 ~ 55° C (when mounted vertically)		
	Storage Temperature	-40 ~ 70° C		
	Relative Humidity	5 ~ 95% (non-condensing)		
Page		20-17	20-17	20-17

\*: APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

## Communication and Motion Modules



Module Name		APAX-5090P	APAX-5095P	APAX-5202P
Description		4-port RS-232/422/485 Communication Module	2-port CANopen Master Module	2-port AMONet Master Module
Serial Communication	Baud Rate	50 bps ~ 230.4 kbps	-	-
	Data Bits	5, 6, 7, 8	-	-
	Stop Bits	1, 1.5, 2	-	-
	Parity	None, even, odd	-	-
CANopen Communication	Data Transfer Rates	-	10, 20, 50, 125, 250, 500, 800, 1,000 kbit/s	-
Motion	Transmission Speed	-	-	2.5, 5, 10 or 20 Mbps
	Slaves Number	-	-	1 Ring: 64 (max.) 2 Rings: 128 (max.)
General	Interface	2 x RS-422/485 2 x RS-232/422/485	2 x CANopen	2 x AMONet
	Connector	26-pin clamp-type terminal	DB9	RJ-45
	Operating Temperature	-10 ~ 55° C (when mounted vertically)		
	Storage Temperature	-40 ~ 70° C		
	Relative Humidity	5 ~ 95% (non-condensing)		
Page		20-18	20-18	20-18

# APAX I/O Module Selection Guide



Module Name		APAX-5013	APAX-5017	APAX-5017H	APAX-5018	APAX-5028
Description		8-ch RTD Module	12-ch AI Module	12-ch High Speed AI Module	12-ch Thermocouple Module	8-ch AO Module
Analog Input	AI Channels	8	12	12	12	-
	Input Type*	RTD (2-wire or 3-wire)	V, mV, mA	V, mV, mA	V, mV, mA, Thermocouple	-
	Sampling Rate (Samples/second)	10 (Total**)	12 (Total**)	1000 (per channel)	12 (Total**)	-
	Input Resolution	16-bit	16-bit	12-bit	16-bit	-
	Voltage Input	-	±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V	0 ~ 500 mV, ±10 V, 0 ~ 10 V	±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V	-
	Current Input	-	±20 mA, 0 ~ 20 mA, 4 ~ 20 mA	0 ~ 20 mA, 4 ~ 20 mA	±20 mA, 0 ~ 20 mA, 4 ~ 20 mA	-
	Direct Sensor Input	RTD (Pt-100, Pt-200, Pt-500, Pt-1000, Balo, Ni 518)	-	-	Thermocouple (Type J, K, T, E, R, S, B)	-
	Wire Burnout Detection	All RTD range	4 ~ 20 mA	4 ~ 20 mA	4 ~ 20 mA and all Thermocouple range	-
Analog Output	AO Channels	-	-	-	-	8
	Output Type*	-	-	-	-	V, mA
	Output Resolution	-	-	-	-	14-bit
	Output Slew Rate	-	-	-	-	0.7 VDC/μs (per channel)
	Voltage Output	-	-	-	-	±2.5 V, ±5 V, ±10 V, 0 ~ 2.5 mV, 0 ~ 5 V, 0 ~ 10 V
	Current Output	-	-	-	-	0 ~ 20 mA, 4 ~ 20 mA
	Short Circuit Protection	-	-	-	-	Yes
	Fail Safe Value	-	-	-	-	Yes
General	Weight	170 g	170 g	175 g	170 g	175 g
	Operating Temperature	-10 ~ 60° C (when mounted vertically)				
	Storage Temperature	-40 ~ 70° C				
	Relative Humidity (non-condensing)	5 ~ 95%				
	Power Consumption (typical)	2.5 W @ 24 V <sub>DC</sub>	4 W @ 24 V <sub>DC</sub>	3.5 W @ 24 V <sub>DC</sub>	3.5 W @ 24 V <sub>DC</sub>	3.5 W @ 24 V <sub>DC</sub>
	Isolation between channels and backplane	2500 V <sub>DC</sub>				
	Power Supply Module (optional)	APAX-5343E				
Page		20-19	20-19	20-20	20-19	20-20

\*: Each channel can be configured with different type and range

\*\* : Sampling rate value depends on used channel number.

Example: Using 6 channels on APAX-5017, sampling rate for each used channel will be 12/6 = 2 samples/second.



Module Name		APAX-5040	APAX-5045	APAX-5046	APAX-5060	APAX-5080
Description		24-ch DI Module	24-ch DI/O Module	24-ch DO Module	12-ch Relay Module	4/8-ch Counter Module
Digital Input	DI Channels	24	12	-	-	4
	Input Type	Sink or Source Load	Sink or Source Load	-	-	Source Load
	Rated Input Voltage	24 V <sub>DC</sub>	24 V <sub>DC</sub>	-	-	24 V <sub>DC</sub>
	Input Voltage Range (signal "0")	-5 ~ 5 V <sub>DC</sub>	-5 ~ 5 V <sub>DC</sub>	-	-	0 ~ 3 V <sub>DC</sub>
	Input Voltage Range (signal "1")	15 ~ 30 V <sub>DC</sub> -15 ~ -30 V <sub>DC</sub>	15 ~ 30 V <sub>DC</sub> -15 ~ -30 V <sub>DC</sub>	-	-	10 ~ 30 V <sub>DC</sub>
	Rated Input Current	3 mA (typical)	3 mA (typical)	-	-	10 mA (typical)
	Input Filter	3 ms	3 ms	-	-	3 ms
	Over Voltage Protection	Yes	Yes	-	-	Yes
Counter Input	Counter Channels	-	-	-	-	4 or 8 (depends on mode)
	Rated Input Voltage	-	-	-	-	24 V <sub>DC</sub>
	Input Voltage Range (signal "0")	-	-	-	-	0 ~ 3 V <sub>DC</sub>
	Input Voltage Range (signal "1")	-	-	-	-	10 ~ 30 V <sub>DC</sub>
	Rated Input Current (signal "1")	-	-	-	-	5 ~ 15 mA (typical)
	Counting Range	-	-	-	-	32-bit + 1-bit overflow/underflow
	Counter Frequency	-	-	-	-	1 MHz (max.)
	Counter Gate and Alarm Function	-	-	-	-	Yes
	Over Voltage Protection	-	-	-	-	Yes
Digital Output	DO Channels	-	12	24	12	4
	Output Type	-	Sink	Sink	Relay (Form A, SPST)	Sink
	Rated Output Voltage	-	24 V <sub>DC</sub>	24 V <sub>DC</sub>	250 V <sub>AC</sub> , 30 V <sub>DC</sub>	24 V <sub>DC</sub>
	Rated Output Current (signal "1")	-	0.5 A	0.5 A	5 A	0.5 A
	Short Circuit Protection	-	Yes	Yes	-	Yes
	Thermal Shutdown Protection	-	Yes	Yes	-	Yes
General	Weight	160 g	165 g	165 g	195 g	170 g
	Operating Temperature	-10 ~ 60° C (when mounted vertically)				
	Storage Temperature	-40 ~ 70° C				
	Relative Humidity (non-condensing)	5 ~ 95%				
	Power Consumption (typical)	2 W @ 24 V <sub>DC</sub>	2.5 W @ 24 V <sub>DC</sub>	2.5 W @ 24 V <sub>DC</sub>	2 W @ 24 V <sub>DC</sub>	2.5 W @ 24 V <sub>DC</sub>
	Isolation between channels and backplane	2500 V <sub>DC</sub>				
	Channel Status LED	Yes (per channel)				
	Fail Safe Value	-	Yes (DO channel)	Yes	Yes	Yes (DO channel)
	Power Supply Module (optional)	APAX-5343E				
Page		20-21	20-21	20-22	20-22	20-22

# APAX-5520CE

PC-based Controller with XScale® CPU

NEW



## Features

- Onboard XScale® PXA270 520 MHz processor
- 64 MB SDRAM on board, 32 MB Flash
- Expands I/O by connecting with APAX-5000 I/O modules
- Windows CE .NET ready platform
- 1 x VGA port for display and 1 x USB ports
- 1 x CompactFlash slot for data logging
- 1 x 10/100 Mbps LAN and 1 x RS-485 ports
- Provides C/C++ and .NET class libraries for I/O control and communication

## Introduction

APAX-5520CE is a very compact and cost effective controller with XScale PXA270 CPU. The built-in Windows CE operating system makes APAX-5520CE a ready application platform to shorten development time. Connecting with other APAX-5000 I/O modules, APAX-5520CE can become a standalone control system. By C/C++ and .NET libraries for the I/O modules, developers can build their applications under the Windows development environment in a short amount of time.

## Specifications

### System Hardware

- **CPU** XScale PXA270 520 MHz
- **Memory** Flash 32M bytes, SDRAM 64M bytes
- **Battery Backup Memory** 256 KB file system, 256 KB direct access
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **VGA** DB15 connector
- **USB Ports** 1 x USB 1.1
- **Storage** 1 x Type II CompactFlash card slot (internal)
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)

### Communication (Ethernet)

- **LAN Ports** 1 x RJ-45 Port, 10/100 Mbps
- **Offer Modbus/TCP Server and Client API for programmer**

### Communication (Serial)

- **Medium** 1 x Isolated RS-485 (2-wire)
- **Maximum Nodes** 32 (in RS-485 daisy-chain network)
- **Offer Modbus/RTU Master and Slave API for programmer**
- **Isolation Protection** 2500 V<sub>DC</sub>

### Software

- **Operating System** Windows CE .NET
- **Control Software** C/C++ and .NET library with utility

### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 210 g
- **Power Consumption** 4.5 W @ 24 V<sub>DC</sub> (typical)

### Environment

- **Operating Temperature** -10 ~ 55 ° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 20 G @ wallmount, half sine, 11 ms  
(Confirms to IEC 60068-2-27)
- **Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis)  
(Confirms to IEC 60068-2-64 and IEC 60068-2-6)

## Ordering Information

- **APAX-5520CE** PC-based Controller with XScale CPU, WinCE
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

\*: APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

# APAX-5620CE

PC-based Controller with  
XScale® CPU and CAN

NEW



CANopen RoHS COMPLIANT PRODUCT CE FCC

## Features

- Onboard XScale® PXA270 520 MHz processor
- 64 MB SDRAM on board, 32 MB Flash
- Expands I/O by connecting with APAX-5000 I/O modules
- Windows CE .NET ready platform
- 1 x VGA port for display and 1 x USB port
- 1 x CompactFlash slot for data logging
- 2 x 10/100 Mbps LAN, 2 x RS-485 and 2 x CANopen interface
- Provides C/C++ and .NET class libraries for I/O control and communication
- Acts as CANopen master to integrate other CANopen devices

## Introduction

APAX-5620CE is a very compact and cost effective controller with XScale PXA270 CPU. The built-in Windows CE operating system makes APAX-5620CE a ready application platform to shorten development time. Connecting with other APAX-5000 I/O modules, APAX-5620CE can become a standalone control system. By C/C++ and .NET libraries for the I/O modules, developers can build their applications under the Windows development environment in a short amount of time. With its built-in CAN interface, APAX-5620KW can perform as CANopen master to connect with other CANopen devices like motors to deliver a complete I/O and motion system.

## Specifications

### System Hardware

- CPU** XScale PXA270 520 MHz
- Memory** Flash 32M bytes, SDRAM 64M bytes
- Battery Backup Memory** 256 KB file system, 256 KB direct access
- Real-time Clock** Yes
- Watchdog Timer** Yes
- VGA** DB15 connector
- USB Ports** 1 x USB 1.1
- Storage** 1 x Type II CompactFlash card slot (internal)
- Connected I/O Modules** 32 (max.)\*
- Digital Signals** 2048 (max.)
- Analog Signals** 512 (max.)

### Communication (Ethernet)

- LAN Ports** 2 x RJ-45 Port, 10/100 Mbps
- Offer Modbus/TCP Server and Client API for programmer**

### Communication (Serial)

- Medium** 2 x Isolated RS-485 (2-wire)
- Maximum Nodes** 32 (in RS-485 daisy-chain network)
- Offer Modbus/TCP Server and Client API for programmer**
- Isolation Protection** 2500 V<sub>DC</sub>

### Software

- Operating System** Windows CE .NET
- Control Software** C/C++ and .NET library with utility

### Communication (CANopen)

- Medium** 2 x Isolated CANopen
- Protocol** CANopen (CiA DSP341)
- Speed** 10, 20, 50, 125, 250, 500, 800, 1000 kbit/s
- Isolation Protection** 2500 V<sub>DC</sub>

### General

- Certifications** CE, FCC class A
- Dimensions (W x H x D)** 30 x 139 x 100 mm
- Enclosure** ABS+PC
- Weight** 210 g
- Power Consumption** 4.5 W @ 24 V<sub>DC</sub> (typical)

### Environment

- Operating Temperature** -10 ~ 55 ° C (when mounted vertically)
- Storage Temperature** -40 ~ 70 ° C
- Relative Humidity** 5 ~ 95% (non-condensing)
- Shock Protection** 20 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis)  
(Confirms to IEC 60068-2-64 and IEC 60068-2-6)

## Ordering Information

- APAX-5620CE** PC-based Controller with XScale CPU, CANopen
- APAX-5002** 2-slot Backplane Module
- APAX-5343E** Power Supply for APAX Expansion Module

\*: APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

# APAX-5570XPE APAX-5571XPE

## PC-based Controller with Celeron® M CPU



### Features

- Intel® Celeron® M 1 GHz or 1.5 GHz CPU processor
- Expands I/O by connecting with APAX-5000 I/O modules
- Provides complete C/C++ and .NET libraries for I/O control and communication
- DVI-I supports dual display
- Dual power input for redundancy with power-fail relay
- 1 x RS-232 and 1 x isolated RS-422/485 ports
- Windows® XP Embedded ready platform
- Combine with APAX-5520KW to deliver dual CPU architecture
- SD card slot for data logging

### Introduction

APAX-5570XPE/5571XPE is a controller with high performance Intel Celeron M grade CPU. Built-in Windows XP Embedded operating system makes APAX-5570XPE/5571XPE a ready application platform to shorten development time. Connecting with other APAX-5000 I/O modules, APAX-5570XPE/5571XPE can become a complete control system. Through C/C++ and .NET class libraries for the I/O modules, developers can build applications under the Win32 development environment in a short amount of time.

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Cooling System** APAX-5570XPE: Fanless, heatsink only  
APAX-5571XPE: Heatsink with fan
- **Mounting** DIN-rail, wall mount (panel mount)
- **Dimensions (W x H x D)** 270 x 142 x 126 mm
- **Enclosure** ABS+PC
- **Weight** APAX-5570XPE: 2.42 kg  
APAX-5571XPE: 2.46 kg
- **Power Consumption (Typical, without inserted module)** APAX-5570XPE: 30 W @ 24 V<sub>DC</sub>  
APAX-5571XPE: 45 W @ 24 V<sub>DC</sub>
- **Power Input** 18 ~ 30 V<sub>DC</sub> (Dual Power Input)
- **Power Reversal** Yes
- **Real-time Clock** Yes
- **Watchdog Timer** Yes
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)

#### System Hardware

- **CPU** APAX-5570XPE: Intel Celeron M 1 GHz (non-cache)  
APAX-5571XPE: Intel Celeron M 1.5 GHz (1 MB L2 cache)
- **System Chipset** Intel 915 GME
- **Memory** 512 MB DDR2 DRAM on board (Dual channel mode)
- **LED Indicators** Power, Run, Error, Battery
- **Display** DVI-I supports DVI and VGA for dual display
- **Audio** Mic-in, Line-out
- **Storage** 1 x SD card slot (SD card size: up to 16 GB)
- **Reset Button** Yes

\*: APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

#### Software

- **Operating System** Windows XP Embedded
- **Control Software** C/C++ and .NET library with utility

#### Communication

- **Serial Ports** 1 x RS-232, 1 x Isolated RS-422/485
- **Serial Port Isolation** 2500 V<sub>DC</sub> (RS-422/485 only)
- **Serial Baud Rate** RS-232: 50 bps ~ 115.2 kbps  
RS-422/485: 50 ~ 230400 bps
- **LAN Ports** 2 x RJ-45 Ports, 10/100/1000 Mbps (Intel 82574L) (supports teaming function)
- **USB Ports** 4 x USB 2.0

#### Environment

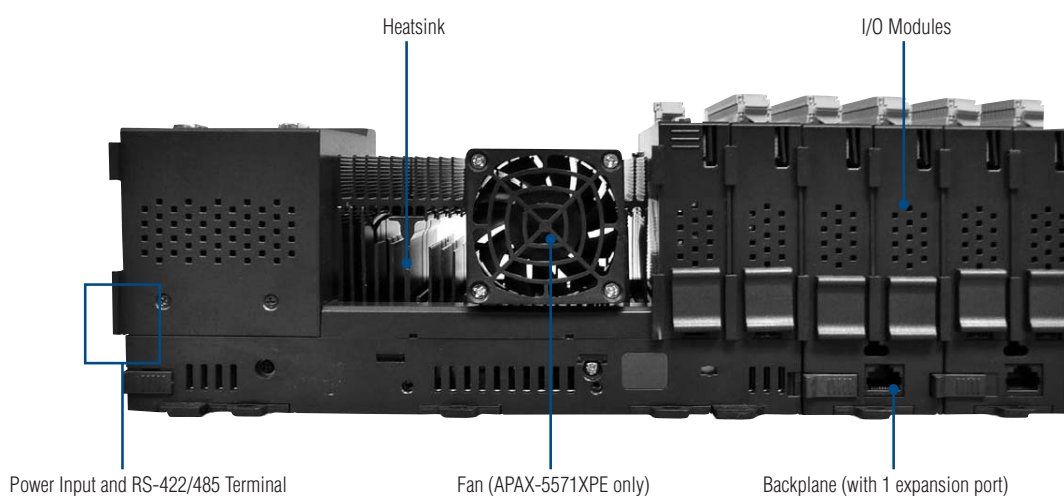
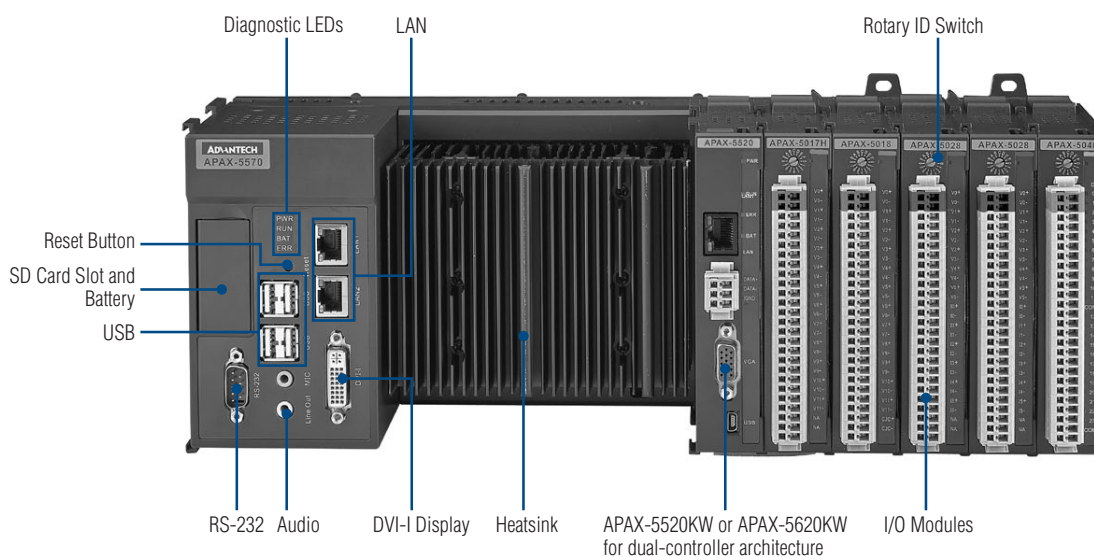
- **Operating Temperature** -10 ~ 55° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 30 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- **Vibration Protection** 2 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-64 and IEC 60068-2-6)

### Ordering Information

- **APAX-5570XPE** PC-based Controller w/ Celeron M 1 GHz, XPe
- **APAX-5571XPE** PC-based Controller w/ Celeron M 1.5 GHz, XPe
- **APAX-5343** Power Supply for APAX-5570 Series

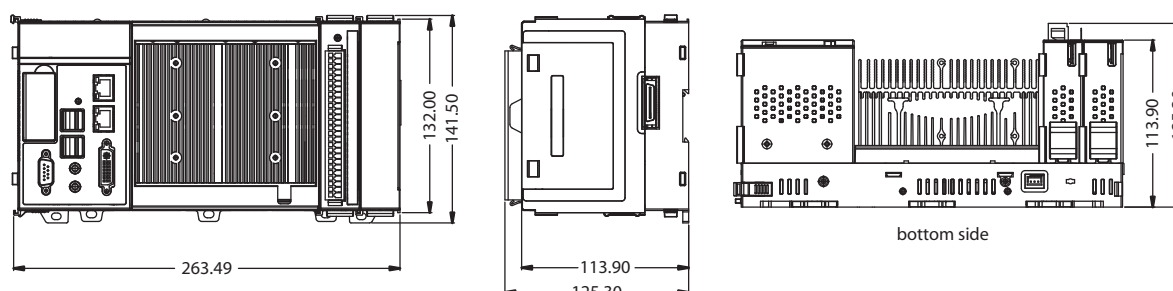
# APAX-5570XPE APAX-5571XPE

19	Embedded Controllers
20	PC-based Controllers
21	PAC
22	Motion Control
23	RS-485 I/O
24	Ethernet I/O
25	Building Automation
26	Self-service Terminals
27	eHome Platforms



## Dimensions

Unit: mm



# APAX-6571XPE

PC-based Controller with  
Intel® Atom™ CPU

NEW



## Features

- Onboard Intel® Atom™ 1.6 GHz
- Two RS-232/422/485 ports with automatic flow control
- 2 x 10/100/1000 Mbps Ethernet ports
- 2 x External USB for dongle and flash drive
- DIN-rail design for easy installation in field cabinet
- Windows XP Embedded ready platform
- Expands I/O by connecting with APAX I/O modules
- Provides C/C++ and .NET class libraries for C or Microsoft VS .NET development environment to control I/O modules

## Introduction

APAX-6571XPE is a controller with high performance Intel Atom grade CPU. Built-in Windows XP Embedded operating system makes APAX-6571XPE a ready application platform to shorten development time. Connecting with other APAX-5000 I/O modules, APAX-6571XPE can become a complete control system. By C/C++ and .NET libraries for the I/O modules, developers can build their applications under C or Microsoft Visual Studio .NET development environment in shortest time.

## Specifications

### General

- **Certifications** CE, FCC class A, CCC, UL
- **Dimension (W x H x D)** 110 x 155 x 140 mm
- **Enclosure** Aluminum + SECC
- **Mounting** DIN-rail, wall mount (panel mount)
- **Power Consumption** 24 W (Typical)
- **Power Input** 10 ~ 36 V<sub>DC</sub> (e.g. +24 V @ 1 A)
- **Weight** 2.0 kg
- **Watchdog Timer** Yes
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)

### System Hardware

- **CPU** Intel Atom 1.6 GHz (N270)
- **Memory** 1 GB DDR2 SDRAM
- **Indicators** LEDs for Power, IDE, Battery, LAN (Active, Status) and Serial (Tx, Rx) and Programmable Diagnosis LEDs
- **Keyboard/Mouse** 1 x PS/2
- **Storage** 1 x internal type I/II CompactFlash® slot
- **Display** DVI-I supports DVI and VGA for dual display
- **Audio** MIC in, Line in, Line out
- **Reset Button** Yes

### Software

- **Operating System** Windows XP Embedded
- **Control Software** C/C++ and .NET library with utility

### Communication

- **Serial Ports** 2 x RS-232/422/485 with DB9 connectors, Automatic RS-485 data flow control
- **Serial Port Speed** RS-232 port: 50 ~ 115.2 kbps  
RS-422/485 port: 50 ~ 115.2 kbps
- **LAN Ports** 2 x RJ-45 Ports, 10/100/1000 Mbps
- **USB Ports** 2 x USB 2.0

### Environment

- **Operating Temperature** -10 ~ 50° C
- **Storage Temperature** -40 ~ 70° C
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Storage Humidity** 0 ~ 95% (non-condensing)
- **Shock Protection** 50 G @ wall mount, half sine, 11 ms  
(Confirms to IEC 60068-2-27)
- **Vibration Protection** 2 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating)  
(Confirms to IEC 60068-2-64)

## Ordering Information

- **APAX-6571XPE** PC-based Controller w/ Atom 1.6 GHz, XPe

\*: APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

# APAX-5070 APAX-5071 APAX-5072

## Modbus/TCP Communication Coupler

## Profinet Communication Coupler

## Ethernet/IP Communication Coupler



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 190 g
- **Connector** 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communication

- **Protocol** Modbus/TCP
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)
- **Data Transfer Rates** 10/100 Mbps
- **Topology** Line or star
- **Isolation Protection** 1,500 V<sub>AC</sub>

#### Environment

- **Operating Temperature** -10 ~ 55° C (mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 10 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- **Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-64 and IEC 60068-2-6)

### Ordering Information

- **APAX-5070** Modbus/TCP Communication Coupler
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Connectors** 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Protocol** Profinet
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)
- **Data Transfer Rates** 100 Mbps
- **Topology** Line or star

#### Environment

- **Operating Temperature** -10 ~ 55° C (mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 10 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- **Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-64 and IEC 60068-2-6)

### Ordering Information

- **APAX-5071** Profinet Communication Coupler
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Connectors** 2 x RJ-45 (2-channel switch, share same IP address)
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Protocol** Ethernet/IP
- **Connected I/O Modules** 32 (max.)\*
- **Digital Signals** 2048 (max.)
- **Analog Signals** 512 (max.)
- **Data Transfer Rates** 10/100 Mbps
- **Topology** line or star
- **Isolation Protection** 1,500 V<sub>AC</sub>

#### Environment

- **Operating Temperature** -10 ~ 55° C (mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Shock Protection** 10 G @ wall mount, half sine, 11 ms (Confirms to IEC 60068-2-27)
- **Vibration Protection** 1 Grms @ 5 ~ 500 Hz (Random, operating, 1 hr/axis)  
2 G @ 5 ~ 500 Hz (Sine, non-operating, 1 hr/axis) (Confirms to IEC 60068-2-64 and IEC 60068-2-6)

### Ordering Information

- **APAX-5072** Ethernet/IP Communication Coupler
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

\*: APAX DI/O modules can use ID number 0 ~ 31, while AI/O modules and counter modules can only use ID numbers 0 ~ 15

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20	PC-based Controllers
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22	Motion Control
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25	Building Automation
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# APAX-5202P APAX-5090P APAX-5095P

## 2-port AMONet Master Module

## 4-port RS-232/422/485 Communication Module

## 2-port CANopen Communication Module



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Interface** 2 x AMONet (Half duplex RS-485 with transformer isolation)
- **Connectors** RJ-45
- **LED Indicators** Active, Error for each port
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Transmission Speed** 2.5, 5, 10 or 20 Mbps (with automatic data flow control)
- **Slaves Number** 64 max. (1 Ring)  
128 max. (2 Rings)
- **Distance Limit** 100 m max. (20 Mbps, 32 slaves)  
50 m max. (20 Mbps, 64 slaves)

#### Protection

- **Surge Protection** 10 kV

#### Environment

- **Operating Temperature** -10 ~ 55° C (mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5202P** 2-port AMONet Master Module

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Interface** COM 1, COM 2: RS-422/485  
COM 3, COM 4: RS-232/422/485
- **Connectors** 1 x 26-pin clamp-type terminal
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Data Bits** 5, 6, 7, 8
- **Stop Bits** 1, 1.5, 2
- **Parity** None, even, odd
- **Baud Rate** 50 bps ~ 230.4 kbps
- **Data Signals** RS-232: TxD, RxD, RTS, CTS, GND  
RS-422: Tx+, Tx-, Rx+, Rx-  
RS-485: Data+, Data-  
128 bytes
- **FIFO**
- **Flow Control** RTS/CTS, Xon/Xoff

#### Protection

- **ESD Protection** 15 kV
- **EFT Protection** 2,500 V<sub>DC</sub>
- **Isolation Protection** 2,500 V<sub>DC</sub> (between COM port and backplane)

#### Environment

- **Operating Temperature** -10 ~ 55° C (mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5090P** 4-port RS-232/422/485 Communication Module

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Interface** 2 x CANopen
- **Connectors** DB9
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 180 g
- **Power Consumption** 2 W @ 5 V<sub>DC</sub> (typical)

#### Communications

- **Protocol** CANopen (CiA DSP341)
- **Speed** 10, 20, 50, 125, 250, 500, 800, 1,000 kbit/s
- **Supports PDO transmission mode**
- **Supports NMT and SDO communication object**
- **Supports Heartbeat producer and consumer**
- **Supports Emergency objects**

#### Protection

- **Isolation Protection** 2,500 V<sub>DC</sub>

#### Environment

- **Operating Temperature** -10 ~ 55° C (mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5095P** 2-port CANopen Module

**Note:** APAX-5202P, APAX-5090P and APAX-5095P must be inserted on the slots of APAX-5570/5571 controller for usage

# APAX-5013 APAX-5017 APAX-5018

## 8-ch RTD Module

## 12-ch Analog Input Module

## 12-ch Thermocouple Input Module



APAX-5013



CE FCC

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 170 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)

#### Analog Input

- **Channels** 8 (Differential)
- **Input Impedance** >10 M $\Omega$
- **Input Type** Pt-100, Pt-200, Pt-500, Pt-1000, Balco, Ni 518 RTD (2-wire and 3-wire)
- **Temperature Range** Pt-100, Pt-200, Pt-500, Pt-1000: -120 ~ 130° C, -200 ~ 850° C  
Supports both IEC 60751 ITS90 (0.03851  $\Omega/\Omega/^\circ\text{C}$ ) and JIS C 1604 (0.03916  $\Omega/\Omega/^\circ\text{C}$ )  
Balco 500: -30 ~ 120° C  
Ni 518: -80 ~ 100° C, 0 ~ 100° C
- **Configure Different Range for Each Channel**
- **Resolution** 16-bit with accuracy  $\pm 0.1\%$  of Full Scale Range
- **Sampling Rate** 10 sample/second (total)
- **Noise Rejection** Hardware Filter (50/60 Hz)
- **Wire Burn-out Detection** Yes

#### Protection

- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**

#### Environment

- **Operating Temperature** -10 ~ 60° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5013** 8-ch RTD Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module



APAX-5017

APAX-5018



CE FCC

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 170 g
- **Power Consumption (typical)** 4 W @ 24 V<sub>DC</sub> (APAX-5017)  
3.5 W @ 24 V<sub>DC</sub> (APAX-5018)

#### Analog Input

- **Channels** 12 (Differential)
  - **Input Type** V, mV, mA (APAX-5017)  
V, mV, mA, Thermocouple (APAX-5018)
  - **Input Impedance** Voltage: >10 M $\Omega$  (APAX-5017), >1 M $\Omega$  (APAX-5018)  
Current: 120 $\Omega$  (Current)
  - **Voltage/Current Range**  $\pm 150$  mV,  $\pm 500$  mV,  $\pm 1$  V,  $\pm 5$  V,  $\pm 10$  V,  $\pm 20$  mA, 0 ~ 20 mA, 4 ~ 20 mA (APAX-5017)  
 $\pm 50$  mV,  $\pm 100$  mV,  $\pm 500$  mV,  $\pm 1$  V,  $\pm 2.5$  V,  $\pm 20$  mA, 0 ~ 20 mA, 4 ~ 20 mA (APAX-5018)
  - **Temperature Range (APAX-5018 only)** Type J (-210 ~ 1200° C), Type K (-270 ~ 1372° C), Type T (-270 ~ 400° C), Type E (-270 ~ 1000° C), Type R (0 ~ 1768° C), Type S (0 ~ 1768° C), Type B (300 ~ 1820° C)
  - **Configure Different Range for Each Channel**
  - **Resolution** 16-bit with accuracy  $\pm 0.1\%$  or better of Full Scale Range (Voltage),  $\pm 0.2\%$  or better of Full Scale Range (Current)
- Note:** Refer to manual for Thermocouple accuracy
- **Sampling Rate** 12 samples/second (total)
  - **Noise Rejection** Hardware Filter (50/60 Hz)
  - **Wire Burn-out Detection** APAX-5017: Yes (4 ~ 20 mA only)  
APAX-5018: Yes (4 ~ 20 mA and Thermocouple)
  - **Common Mode Voltage** 200 V<sub>DC</sub>

#### Protection

- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**
- **Over Voltage Protection**

#### Environment

- **Operating Temperature** -10 ~ 60° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5017** 12-ch Analog Input Module
- **APAX-5018** 12-ch Thermocouple Input Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

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# APAX-5017H

# APAX-5028

## 12-ch High Speed Analog Input Module

## 8-ch Analog Output Module



APAX-5017H



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 175 g
- **Power Consumption** 3.5 W @ 24 V<sub>DC</sub> (typical)

#### Analog Input

- **Channels** 12
- **Input Impedance** 2 M $\Omega$  (Voltage), 120  $\Omega$  (Current)
- **Input Type** V, mV, mA
- **Input Range** 0 ~ 500 mV,  $\pm 10$  V, 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA
- **Configure Different Range for Each Channel**
- **Resolution** 12-bit with accuracy  $\pm 0.1\%$  or better of Full Scale Range (Voltage),  $\pm 0.2\%$  or better of Full Scale Range (Current)
- **Sampling Rate** 1,000 sample/second (per channel)
- **Span Drift**  $\pm 25$  ppm/ $^{\circ}$  C
- **Zero Drift**  $\pm 6$   $\mu$ V/ $^{\circ}$  C
- **Wire Burn-out Detection** Yes (4~20 mA only)

#### Protection

- **Over Voltage Protection**
- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**

**Note:** The voltage between any two pins must not exceed 15 V

#### Environment

- **Operating Temperature** -10 ~ 60 $^{\circ}$  C (when mounted vertically)
- **Storage Temperature** -40 ~ 70 $^{\circ}$  C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5017H** 12-ch High Speed Analog Input Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module



APAX-5028



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 175 g
- **Power Consumption** 3.5 W @ 24 V<sub>DC</sub> (typical)

#### Analog Output

- **Channels** 8
- **Output Type** V, mA
- **Output Range**  $\pm 2.5$  V,  $\pm 5$  V,  $\pm 10$  V, 0 ~ 2.5 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 20 mA, 4 ~ 20 mA
- **Configure Different Range for Each Channel**
- **Resolution** 14-bit with accuracy  $\pm 0.1\%$  or better of Full Scale Range
- **Settling time** about 500  $\mu$ s
- **Slew Rate** 0.7 V<sub>DC</sub>/ $\mu$ s (per channel)
- **Span Drift**  $\pm 60$  ppm/ $^{\circ}$  C
- **Zero Drift**  $\pm 275$  mV/ $^{\circ}$  C (Voltage)  $\pm 250$  mV/ $^{\circ}$  C (Current)
- **Drive Voltage (Current Mode)** 15 V<sub>DC</sub>
- **Load (Current Mode)** 0 ~ 500 $\Omega$

#### Protection

- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**
- **Short Circuit Protection**

#### Environment

- **Operating Temperature** -10 ~ 60 $^{\circ}$  C (when mounted vertically)
- **Storage Temperature** -40 ~ 70 $^{\circ}$  C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5028** 8-ch Analog Output Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

# APAX-5040

# APAX-5045

## 24-ch Digital Input Module

## 24-ch Digital Input/Output Module



APAX-5040



CE FCC

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 160 g
- **Power Consumption** 2 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel  
On: Logic level 1  
Off: Logic level 0

#### Digital Input

- **Channels** 24
- **Points per Common** 12
- **Type** Sink or Source Load
- **Input Voltage** Rated Value: 24 V<sub>DC</sub>  
For "0" signal: -5 ~ 5 V<sub>DC</sub>  
For "1" signal: 15 ~ 30 V<sub>DC</sub> and -15 ~ -30 V<sub>DC</sub>
- **Input Impedance** 10 kΩ
- **Input Delay** From logic level 0 to 1: 0.2 ms  
From logic level 1 to 0: 0.2 ms
- **Operating Frequency** 3 kHz
- **Input Filter** 3 ms

#### Protection

- 2,500 V<sub>DC</sub> Isolation Between Channels and Backplane
- Over Voltage Protection

#### Environment

- **Operating Temperature** -10 ~ 60° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5040** 24-ch Digital Input Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module



APAX-5045



CE FCC

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 165 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel  
On: Logic level 1  
Off: Logic level 0

#### Digital Input

- **Channels** 12
- **Points per Common** 12
- **Type** Sink or Source Load
- **Input Voltage** Rated Value: 24 V<sub>DC</sub>  
For "0" signal: -5 ~ 5 V<sub>DC</sub>  
For "1" signal: 15 ~ 30 V<sub>DC</sub> and -15 ~ -30 V<sub>DC</sub>
- **Input Impedance** 10 kΩ
- **Input Delay** From Logic level 0 to 1: 0.2 ms  
From Logic level 1 to 0: 0.2 ms
- **Operating Frequency** 3 kHz
- **Input Filter** 3 ms

#### Digital Output

- **Channels** 12 (Sink)
- **Voltage Range** 8 ~ 35 V<sub>DC</sub>
- **Rated Current Output** 0.5 A (per channel, at signal "1")
- **Permitted Current Output** Max. 0.75 A (at signal "1")
- **Leakage Current** 0.1 mA (at signal "0")
- **Switch Rate:** Resistive load: 300 Hz (max.)  
Inductive load: max. 20 Hz (max.)  
Lamp load: max. 200 Hz (5W lamp and under 50 Ω, 24 V)

#### Protection

- 2,500 V<sub>DC</sub> Isolation Between Channels and Backplane
- Over Voltage Protection (for DI channel)
- Short Circuit Protection (For DO channel)
- Thermal Shutdown Protection (For DO channel)

#### Environment

- **Operating Temperature** -10 ~ 60° C (mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5045** 24-ch Digital Input/Output Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

- 19 Embedded Controllers
- 20 PC-based Controllers
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# APAX-5046 APAX-5060 APAX-5080

## 24-ch Digital Output Module

## 12-ch Relay Output Module

## 4/8-ch High Speed Counter Module



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 165 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel  
On: Logic level 1  
Off: Logic level 0

#### Digital Output

- **Channels** 24 (Sink Type)
- **Voltage Range** 8 ~ 35 V<sub>DC</sub>
- **Rated Current Output** 0.5 A (per channel, at signal "1")
- **Leakage Current** 0.1 mA (at signal "0")
- **Switch Rate:** Resistive load: 300 Hz (max.)  
Inductive load: max. 20 Hz (max.)  
Lamp load: max. 200 Hz (5W lamp and under 50 Ω, 24 V)

#### Protection

- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**
- **Short Circuit Protection**
- **Thermal Shutdown Protection**

#### Environment

- **Operating Temperature** -10 ~ 60° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5046** 24-ch Digital Output Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 195 g
- **Power Consumption** 2 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel  
On: Logic level 1  
Off: Logic level 0

#### Relay Output

- **Channels** 12
- **Relay Type** Form A (SPST)
- **Contact Rating** 5 A @ 250 V<sub>AC</sub>/30 V<sub>DC</sub> (Resistive load)
- **Switching Capacity and Lifetime of the Contact (For Resistive Load)**  
VDE: 30,000 operations (5 A @ 250 V<sub>AC</sub>, 10 operations/minute at 8° C)  
70,000 operations (5 A @ 30 V<sub>DC</sub>, 10 operations/ minute at 85° C)  
UL: 60,000 operations (5 A @ 250 V<sub>AC</sub>)  
100,000 operations (5 A @ 30 V<sub>DC</sub>)  
Mechanism: 20,000,000 operations (no load, 300 operations/min)
- **Contact Resistance** 30 mΩ (max.)
- **Insulation Resistance** 1 GΩ (min.) at 500 V<sub>DC</sub>

#### Protection

- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**

#### Environment

- **Operating Temperature** -10 ~ 60° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

### Ordering Information

- **APAX-5060** 12-ch Relay Output Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 30 x 139 x 100 mm
- **Enclosure** ABS+PC
- **Weight** 170 g
- **Power Consumption** 2.5 W @ 24 V<sub>DC</sub> (typical)
- **Status Display** LED per channel (for DI, DO channel)  
On: Logic level 1  
Off: Logic level 0

#### Counter/Frequency Input

- **Channels and Mode** 8 (Up and Frequency mode)  
4 (Pulse/Direction, Up/Down, A/B phase mode)
- **Counting Range** 32-bit + 1-bit overflow/underflow
- **Minimum Pulse Width** 1 μs
- **Counter Frequency** 1 MHz (max.)
- **Input Voltage** For "0" signal: 0 ~ 3 V<sub>DC</sub>  
For "1" signal: 10 ~ 30 V<sub>DC</sub>

#### Digital Input

- **Channels** 4
- **Type** Source Load
- **Input Voltage** For "0" signal: 0 ~ 3 V<sub>DC</sub>  
For "1" signal: 10 ~ 30 V<sub>DC</sub>

#### Digital Output

- **Channels** 4 (Sink Type)
- **Output Voltage Range** 8 ~ 35 V<sub>DC</sub>
- **Rated Output Current** 0.5 A (per channel)

#### Protection

- **2,500 V<sub>DC</sub> Isolation Between Channels and Backplane**
- **Over Voltage Protection (For DI and counter channel)**
- **Short Circuit Protection (For DO channel)**
- **Thermal Shutdown Protection (For DO channel)**

#### Environment

- **Operating Temperature** -10 ~ 60° C (when mounted vertically)
- **Storage Temperature** -40 ~ 70° C
- **Relative Humidity** 5 ~ 95% (non condensing)

### Ordering Information

- **APAX-5080** 4/8-ch High Speed Counter Module
- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

# APAX-5343 APAX-5343E APAX-5001/5002

Power Supply for APAX-5570 Series  
Power Supply for APAX Expansion  
Modules

1-slot/2-slot Backplane Module



APAX-5343

APAX-5343E



## Specifications

### Input

- **Rated Voltage** 115/230 V<sub>AC</sub>
- **Voltage Range** 90 ~ 264 V<sub>AC</sub>
- **Rated Input Current** 1.5 A (at rated load)
- **Rated Input Frequency** 50/60 Hz
- **Input Frequency Range** 47 ~ 63 Hz
- **Inrush Current Limit** < 50 A

### Output

- **Output Power** 72 W
- **Power Loss** about 8~9 W (at rated load)
- **Efficiency** > 88% (at rated load)
- **Rated Voltage** 24 V<sub>DC</sub>
- **Rated Output Current** 3 A
- **Output Current Limit** 3.5 ~ 4.3 A
- **Residual Ripple** < 240 mVpp
- **Startup Delay** < 3 second
- **Voltage Rise** 60 ms (typical)

### Protection

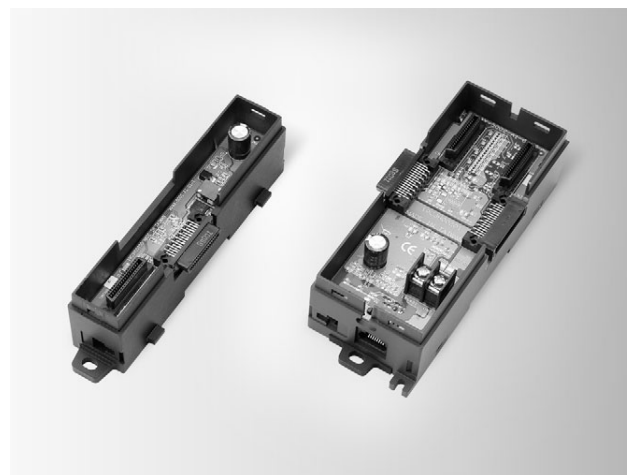
- **Isolation Protection (In/Out)** 4242 V<sub>DC</sub>
- **Output Over Voltage Protection** shutdown as approximate 25 ~ 27 V<sub>DC</sub>, latch off mode
- **Over Load Protection** auto-recovery mode
- **Short Circuit Protection** auto-recovery mode

### General

- **Certifications** CE, FCC class A, UL 508, Energy Star
- **Dimensions (W x H x D)** 75 x 151 x 115 mm
- **Enclosure** PC
- **Operating Temperature** 0 ~ 50° C (when mounted vertically)
- **Storage Temperature** -20 ~ 75° C
- **Relative Humidity** 5 ~ 95% (non-condensing)
- **Mounting** DIN-rail, wall mount (panel mount)

## Ordering Information

- **APAX-5343** Power Supply for APAX-5570 Series
- **APAX-5343E** Power Supply for APAX Expansion Module



APAX-5001

APAX-5002



## Specifications

### General

- **Certifications** CE, FCC class A
- **Dimensions (W x H x D)** 28 x 151 x 38 mm (APAX-5001)  
54 x 151 x 38 mm (APAX-5002)
- **Enclosure** ABS+PC
- **Weight** 70 g (APAX-5001)  
120 g (APAX-5002)
- **Mounting** DIN-rail, wall mount (panel mount)
- **Power Consumption** 0.3 W @ 24 V<sub>DC</sub> (APAX-5001)  
1.3 W @ 24 V<sub>DC</sub> (APAX-5002)
- **Power Input** 18 ~ 30 V<sub>DC</sub>
- **Slot Number** 1 (APAX-5001)  
2 (APAX-5002)

### Environment

- **Operating Temperature** 0 ~ 60° C (when mounted vertically)
- **Storage Temperature** -25 ~ 75° C
- **Relative Humidity** 5 ~ 95% (non-condensing)

## Ordering Information

- **APAX-5001** 1-slot Backplane Module
- **APAX-5002** 2-slot Backplane Module
- **APAX-5343E** Power Supply for APAX Expansion Module

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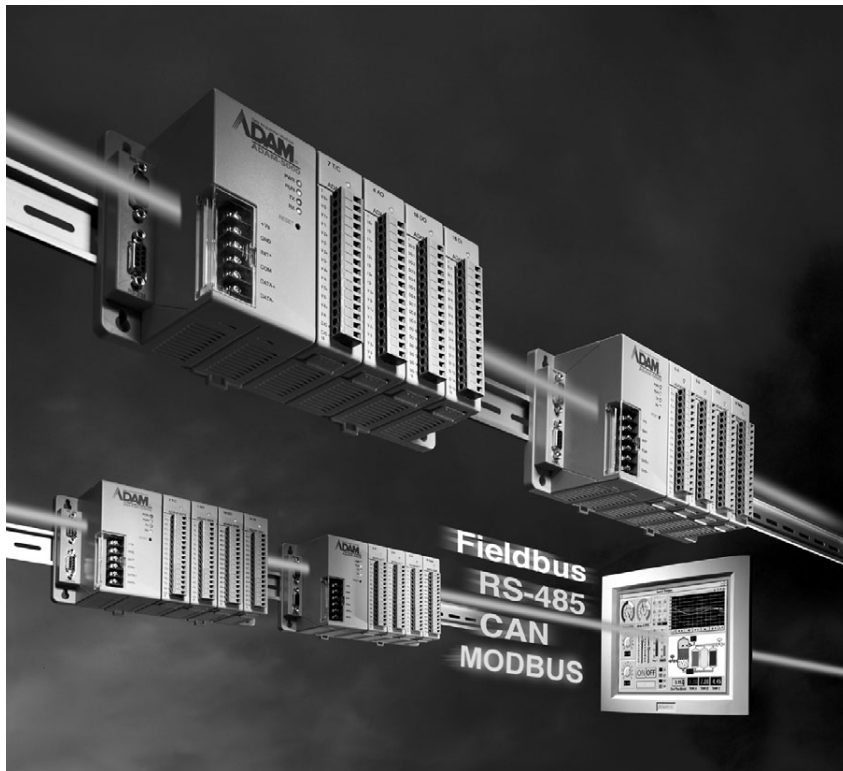
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# ADAM-5000 Series



## Open Network and Fieldbus Solutions for Device Networking



## Introduction

The Fieldbus concept will change the control environment and device characteristics of future control systems in both processing and manufacturing. Compared with traditional systems, the Fieldbus system reduces cost of cabling, commissioning, and installation. In addition, the Fieldbus system has greater reliability.

The ADAM-5000 series, a compact distributed data acquisition and control system, supports the shift toward Fieldbus-based systems. Based on popular Fieldbus data communication structures such as RS-485 and Modbus, the ADAM-5000 series now offers two different DA&C systems that allow field I/O devices to easily connect to PC network applications: the ADAM-5000 DA&C systems and the ADAM-5510 series of PC-based controllers.



Class I, Div. 2 Groups ABCD  
(NI / I / 2 / ABCD / T\*)

## ADAM-5000 Series - Distributed I/O Systems

### Ethernet-based Data Acquisition and Control System

With the ADAM-5000/TCP as your Ethernet I/O data processing center, you can monitor and control field signals at a speed of 10/100 Mbps. The best field-proven communication performance that can be reached in industrial network environments. Additionally, the popular Modbus/TCP protocol is supported as well.

### RS-485 based Data Acquisition and Control System

The ADAM-5000/485 system is a data acquisition and control system that can acquire, monitor and control data through multi-channel I/O modules. It communicates with a network master over a twisted-pair, multi-drop RS-485 network. Both ADAM ASCII and Modbus/RTU protocols are supported.

## ADAM-5000 Series - PC-based Controllers

### Ethernet-enabled PC-based Controllers

The ADAM-5510 series of PC-based programmable controllers includes ADAM-5510M, ADAM-5510E, ADAM-5510/TCP and ADAM-5510E/TCP. They feature Intel x86-based CPUs running Datalight ROM-DOS.

Users can use Borland C 3.0 to develop the application program and then download it by Windows-based ADAM-5510 series utility. The Ethernet-enabled feature of ADAM-5510/TCP and ADAM-5510E/TCP enables features like: FTP server, web server, TCP/UDP connections and email alarm. The ADAM-5510 controllers also have high expansion capability by supporting Modbus/RTU master/slave and Modbus/TCP client/server functions.

ADAM-5550CE features AMD GX2 CPU running Windows CE operating system. Users can use Microsoft Visual Studio .NET to develop the application program.

## Distributed I/O Systems & PC-based Controllers

### Maximum System Design Flexibility

The ADAM-5000's modular design allows users to tailor solutions based on their own requirements. Built-in programmable I/O ranges and alarm outputs enhance flexibility in system design. A variety of communication media such as twisted-pair wiring, radio modems and fiber optics are supported.

### System Maintenance and Troubleshooting

The ADAM-5000 series uses hardware self-test and software diagnosis to monitor system problems. Also included is a watchdog timer that monitors the microprocessor. If the system crashes, the watchdog automatically resets the system. Node ID setting is easily accomplished by setting a DIP switch on the front of the system.

### Easy Installation and Networking

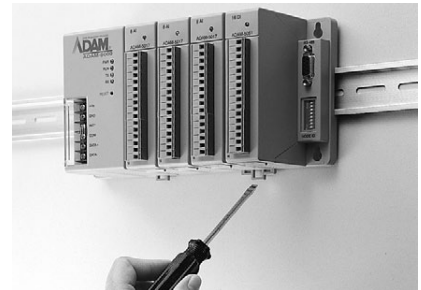
The ADAM-5000 series can be easily mounted on a DIN-rail or on a panel. Signal connections, network modifications and maintenance are simple and quick. Building a multi-drop network only requires a single twisted pair of wires.

### Proven for Industrial Environments

The ADAM-5000 series can operate in industrial environments at temperatures between -10 and 70° C, and can use unregulated power sources between 10 and 30 V<sub>DC</sub>. These units are protected against accidental power supply reversals. A 3-way isolation design (I/O, power & communication) prevents ground loops and reduces the effect of electrical noise in the system.

### Extensive Software Support

The ADAM-5000 series is supported by most standard process controls and HMI software. .NET Class LIB is provided for use with Windows applications. OPC drivers provide links to a wide range of HMI/SCADA software packages such as InTouch, FIX and ICONICS. Advantech data acquisition software and Advantech Studio SCADA/HMI software are both tightly integrated with the ADAM-5000 systems.



DIN-rail Mounting

Installed with industrial standard DIN-rails



Panel/Wall Mounting

Flat surface system mounting



Node ID Setting

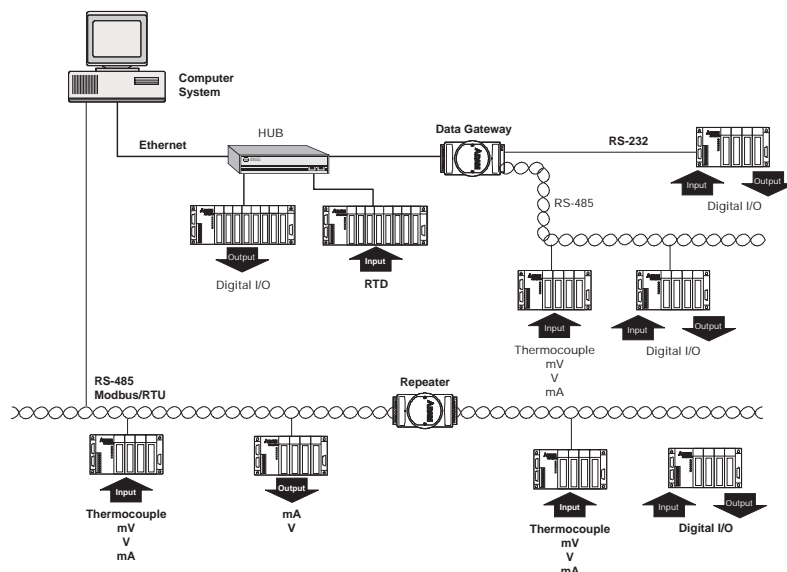
8-pin dip switch configuration



Connection

Pre-wired plug-in terminals with I/O modules

### Simple & Low Cost Network



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# ADAM-5000 Controller Selection Guide



System	ADAM-5510M	ADAM-5510E	ADAM-5510/TCP	ADAM-5510E/TCP	ADAM-5550CE
CPU	80188				AMD Geode GX533 (GX2)
RAM	640 KB				128 MB DDR SDRAM
Flash ROM	256 KB				-
Flash Memory	256 KB				-
Flash Disk	1 MB				-
OS	ROM-DOS				WinCE 5.0
Real-time Clock	Yes				
Watchdog Timer	Yes				
COM1	RS-232	RS-232/485	RS-232	RS-232/RS-485	RS-232/485
COM2	RS-485				
COM3 (Programming)	RS-232 (TX, RX, GND)				RS-232
COM4	RS-232/485				
I/O Slots	4	8	4	8	8
Power Consumption	4 W				12 W
Isolation					
Communication	2,500 V <sub>DC</sub> (COM2 RS-485)				2,500 V <sub>DC</sub> (COM2 RS-485) 1,000 V <sub>DC</sub> (COM4 RS-485)
Communication Power	3,000 V <sub>DC</sub>				
I/O Module	3,000 V <sub>DC</sub>				
Diagnosis					
Status Display	Power, CPU, Communication, Battery				Power, User define
Self Test	Yes, while ON				
Software Diagnosis	Yes				
Communication					
Network	RS-232/485		Ethernet (RJ-45)		Ethernet (2 x RJ-45)
Speeds	1,200 bps ~ 115.2 kbps		10/100 Mbps		10/100 Mbps
Max. Distance	4,000 feet (1.2 km)		150 m		150 m
Data Format	N, 8, 1, 1		-	-	-
Max. Nodes	32	32	256 for Ethernet, 32 for RS-485	256 for Ethernet, 32 for RS-485	-
Protocol	User Defined, Modbus/RTU	User Defined, Modbus/RTU	User Defined, Modbus/RTU, Modbus/TCP	User Defined, Modbus/RTU, Modbus/TCP	Modbus/RTU, Modbus/TCP
Remote I/O	Modbus Device				
Power Requirements	10 ~ +30 V <sub>DC</sub>				
Environment					
Operating Temperature	-10 ~ 70° C (14 ~ 158° F)				0 ~ 55° C (32 ~ 131° F)
Storage Temperature	-25 ~ 85° C (-13 ~ 185° F)				
Humidity	5 ~ 95%				
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## Controller Selection Guide



System	ADAM-5000/485	ADAM-5000E	ADAM-5000L/TCP	ADAM-5000/TCP
CPU	80188	80188	RISC CPU	
RAM	-	-	4 MB	
Flash ROM (User AP)	-	-	512 KB	
Flash Memory (Data Storage)	-	-	-	
Flash Disk	-	-	-	
OS	-	-	real-time OS	
Timer BIOS	-	-	-	
Real-time Clock	-	-	-	
Watchdog Timer	Yes			
I/O Slots	4	8	4	8
Power Consumption	3 W		4.0 W	5.0 W
Isolation				
Communication	2,500 V <sub>DC</sub>	3,000 V <sub>DC</sub>	RS-485: 1,500 V <sub>DC</sub>	
Communication Power	3,000 V <sub>DC</sub>			
I/O Module	3,000 V <sub>DC</sub>			
Diagnosis				
Status Display	Power, CPU, Communication		Power, CPU, Error Diagnostic, Communication	
Self Test	Yes, while ON			
Software Diagnosis	Yes			
Communication				
Interface	RS-232/485 (2-wire)	RS-232/485 (2-wire)	Ethernet	
Speeds (bps)	1,200, 2,400, 4,800, 9,600, 19.2 K, 38.4 K, 57.6 K, 115.2 K	1,200, 2,400, 4,800, 9,600, 19.2 K, 38.4 K, 57.6 K, 115.2 K	10 M, 100 M	
Max. Distance	4,000 feet (1.2 km)	4,000 feet (1.2 km)	100 m without repeater	
Data Format	Advantech protocol: N, 8, 1 Modbus protocol: N, 8, 1 N, 8, 2 E, 8, 1 O, 8, 1	Advantech protocol: N, 8, 1 Modbus protocol: N, 8, 1 N, 8, 2 E, 8, 1	TCP/IP	
Max. Nodes	128	128	Depend on IP address	
Protocols	ADAM ASCII/Modbus Protocol	ADAM ASCII/Modbus Protocol Modbus/TCP		
Remote I/O	-	-	20 nodes Modbus devices	
Power Requirements	+10 ~ +30 V <sub>DC</sub>			
Environment				
Operating Temperature	-10 ~ 70° C (14 ~ 158° F)			
Storage Temperature	-25 ~ 85° C (-13 ~ 185° F)			
Humidity	5 ~ 95%			
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# ADAM-5000 I/O Module Selection Guide

## Analog Input/Output Modules



Module		ADAM-5013	ADAM-5017	ADAM-5017P	ADAM-5017UH	ADAM-5018	ADAM-5018P
Analog Input	Resolution	16 bit	16 bit	16 bit	12 bit	16 bit	16 bit
	Input Channel	3	8	8	8	7	7
	Sampling Rate	10 (total**)	10 (total**)	10 (total**)	200K*	10 (total**)	10 (total**)
	Voltage Input	-	±150 mV ±500 mV ±1 V ±5 V ±10 V	±150 mV ±500 mV ±15V ±10V ±5 V ±1 V 0 ~ 150mV 0 ~ 500mV 0 ~ 1V 0 ~ 5V 0 ~ 10V 0 ~ 15V	±10 V 0 ~ 10 V	±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±2.5 V	±15 mV ±50 mV ±100 mV ±500 mV ±1 V ±2.5 V
	Current Input	-	±20 mA	±20 mA, 4 ~ 20mA	0 ~ 20 mA, 4 ~ 20 mA	±20 mA	4 ~ 20 mA
	Direct Sensor Input	Pt or Ni RTD	-	-	-	J, K, T, E, R, S, B	J, K, T, E, R, S, B
Isolation		3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>
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\*: The sampling rate vary with the controller.

\*\*\*: Sampling rate value depends on used channel number.

Example: Using 5 channels on ADAM-5017, sampling rate for each used channel will be 10/5 = 2 samples/second.



Module		ADAM-5024	ADAM-5050	ADAM-5051/ ADAM-5051D/ ADAM-5051S	ADAM-5052	ADAM-5053S
Output Channels		4	-	-	-	-
Analog Output	Resolution	12 bit	-	-	-	-
	Voltage Output	0 ~ 10 V	-	-	-	-
	Current Output	0 ~ 20 mA 4 ~ 20 mA	-	-	-	-
Digital Input and Digital Output	Digital Input Channels	-	16 DI/O (bit-wise selectable)	16 (ADAM-5051) 16 w/LED (5051D/5051S)	8 w/LED	32
	Digital Output Channels	-		-	-	-
Counter (32-bit)	Channels	-	-	-	-	-
	Input Frequency	-	-	-	-	-
	Mode	-	-	-	-	-
COMM	Channels	-	-	-	-	-
	Type	-	-	-	-	-
Isolation		3,000 V <sub>DC</sub>	-	2,500 V <sub>DC</sub> (5051S)	5,000 V <sub>RMS</sub>	2,500 V <sub>DC</sub>
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## Digital Input/Output Modules



Module		ADAM-5055S	ADAM-5056/ ADAM-5056D	ADAM-5056S/ ADAM-5056SO	ADAM-5057S	ADAM-5060
Digital Input and Digital Output	Digital Input Channels	8 w/LED	-	-	-	-
	Digital Output Channels	8 w/LED	16 (ADAM-5056) 16 w/LED (ADAM-5056D)	16 w/LED	32	6 relay (2 form A/4 form C)
Isolation		2,500 V <sub>DC</sub>	-	2,500 V <sub>DC</sub>	2,500 V <sub>DC</sub>	-
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Module		ADAM-5069	ADAM-5080	ADAM-5081	ADAM-5090/ ADAM-5091	ADAM-5095
Digital Input and Digital Output	Digital Input Channels	-	-	-	-	-
	Digital Output Channels	8 power relay (form A)	-	-	-	-
Counter (32-bit)	Channels	-	4	4/8	-	-
	Input Frequency	-	0.3 ~ 1000 Hz max. (frequency mode) 5000 Hz max. (counter mode)	5 Hz ~ 1 MHz max. (frequency mode) 1 MHz max. (counter mode)	-	-
	Mode	-	Frequency, Up/Down Counter, Bi-direction Counter	Frequency, Counter (Up/ Down, Bi-direction, UP, A/B Phase)	-	-
COMM	Channels	-	-	-	4	2
	Type	-	-	-	RS-232	CAN
Isolation		-	1,000 V <sub>RMS</sub>	2,500 V <sub>DC</sub>	-	1,000 V <sub>DC</sub>
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# ADAM-5000 I/O Module Selection Guide

## Motion and Storage Modules



Model		ADAM-5202	ADAM-5240	ADAM-5030
Axes	Number of Axes	-	4	-
	Linear Interpolation	-	v	-
	2-Axis Circle Interpolation	-	v	-
Advanced Functions	Encoder Channels	-	4	-
	Limit switch Input Channel	-	8	-
	Home Input Channel	-	4	-
	Emergency stop Input Channel	-	1	-
	Slow Down Limit Switch	-	8	-
	Servo On Output Channel	-	4	-
	General Purpose DO Channel	-	4	-
	Position Compare Event	-	V	-
	Remote Motion	V	-	-
	Remote I/O	V	-	-
	Board ID	-	-	-
Connectors		4 x RJ-45	100-Pin SCSI-II	-
Wiring Board		-	ADAM-3952	-
Remote Slave Module		AMAX-2752SY/2754SY/2756SY AMAX-2241/2242/2243	-	-
Storage	Type	-	-	SD (Secure Digital Card)
	Channel	-	-	2
	Size	-	-	2 GB (Max)
USB	Type	-	-	V2.0 (compliant)
	Channel	-	-	2
Supported Controller		ADAM-5550KW		
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# ADAM-5000 Controller Support Table

Type		PAC			PC-based Controller		
System		ADAM-5550KW	ADAM-5510KW ADAM-5510EKW	ADAM-5510KW/TCP ADAM-5510EKW/TP	ADAM-5550CE	ADAM-5510/TCP ADAM-5510E/TCP	ADAM-5510M ADAM-5510E
Function	I/O Module	8-slot Micro PAC with GX2 CPU	4/8-slot Softlogic Controller w/ RS-485	4/8-slot Softlogic Controller w/ Ethernet	8-slot PC-based Controller with GX2 CPU	4/8-slot PC-based Controller with Ethernet	4/8-slot PC-based Controller with RS-485
Analog Input (AI)	ADAM-5013	•	•	•	•	•	•
	ADAM-5017P	•	-	-	•	•	•
	ADAM-5017UH	•	-	-	•	•	•
	ADAM-5018P	•	-	-	•	•	•
Analog Output (AO)	ADAM-5024	•	•	•	•	•	•
Digital Input (DI)	ADAM-5051S	•	•	•	•	•	•
	ADAM-5053S	•	-	-	•	-	-
Digital Output (DO)	ADAM-5056S	•	•	•	•	•	•
	ADAM-5056SO	•	•	•	•	•	•
	ADAM-5057S	•	-	-	•	-	-
Digital I/O	ADAM-5055S	•	•	•	•	•	•
Relay Output	ADAM-5068	•	•	•	•	•	•
	ADAM-5069	•	•	•	•	•	•
Counter/ Frequency	ADAM-5080	-	•	•	-	•	•
	ADAM-5081	•	-	-	•	•	•
Comm.	ADAM-5090	-	•	•	-	•	•
	ADAM-5091	•	-	-	•	-	-
	ADAM-5095	•	-	-	•	-	-
Motion	ADAM-5202	•	-	-	•	-	-
	ADAM-5240	•	-	-	•	-	-
SD	ADAM-5030	•	-	-	•	-	-

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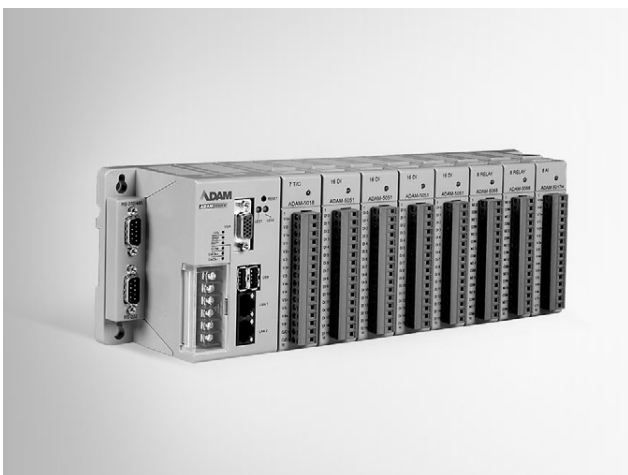
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# ADAM-5000 Remote I/O System Support Table

Remote I/O System			ADAM-5000/485	ADAM-5000E	ADAM-5000L/TCP	ADAM-5000/TCP
Function	I/O Module	Description	4-slot Distributed DA&C for RS-485	8-slot Distributed DA&C for RS-485	4-slot Distributed DA&C for Ethernet	8-slot Distributed DA&C for Ethernet
Analog Input (AI)	ADAM-5013	3-ch RTD Input	•	•	•	•
	ADAM-5017	8-ch AI	•	•	•	•
	ADAM-5017P	8-ch AI w/ Independent Input Range	•	•	•	•
	ADAM-5017H	8-ch high Speed (1K) AI	•	•	•	•
	ADAM-5017UH	8-ch Ultra high Speed (200K) AI	•	•	•	•
	ADAM-5018	7-ch Thermocouple Input	•	•	•	•
	ADAM-5018P	7-ch Thermocouple Input w/ Independent Input Range	•	•	•	•
Analog Output (AO)	ADAM-5024	4-ch AO	•	•	•	•
Digital Input (DI)	ADAM-5051	16-ch DI	•	•	•	•
	ADAM-5051D	16-ch DI w/ LED	•	•	•	•
	ADAM-5051S	16-ch Isolated DI w/ LED	•	•	•	•
	ADAM-5052	8-ch Isolated DI w/ LED	•	•	•	•
Digital Output (DO)	ADAM-5056	16-ch DO	•	•	•	•
	ADAM-5056D	16-ch DO w/ LED	•	•	•	•
	ADAM-5056S	16-ch Isolated DO w/ LED	•	•	•	•
	ADAM-5056SO	16-ch Source Type Isolated DO w/ LED	•	•	•	•
Digital I/O	ADAM-5050	16-ch Universal Digital I/O	•	•	•	•
	ADAM-5055S	16-ch Isolated Digital I/O w/ LED	•	•	•	•
Relay Output	ADAM-5060	6-ch Relay Output	•	•	•	•
	ADAM-5068	8-ch Relay Output	•	•	•	•
	ADAM-5069	8-ch Power Relay Output w/ LED	•	•	•	•
Counter/ Frequency	ADAM-5080	4-ch Counter/Frequency	•	•	•	•
	ADAM-5081	4-ch High Speed Counter/Frequency	•	•	•	•

# ADAM-5550CE

**8-slot PC-based Controller  
with GX2 CPU**



RoHS COMPLIANT PRODUCT CE FCC

## Features

- Support VGA port for local display of HMI software
- Can be operated with or without display/keyboard/mouse
- Remote monitoring through Web Server
- Remote maintenance via FTP Server
- Support .NET class library in Windows CE
- Supports SD Storage I/O Module
- Supports AMONet Master Module
- Supports Motion Control Modules
- Remote I/O expansibility
- Rich support to ADAM-5000 I/O Modules

## Introduction

ADAM-5550CE is a PC-based Controller designed for control tasks which require Industrial PC computing performance with a PLC form factor and I/O module design. ADAM-5550CE offers an AMD Geode GX533 CPU along with control specific features such as watchdog timer, battery backup RAM. ADAM-5550CE features .NET class library which supports Microsoft Visual Studio .NET programming languages under WinCE 5.0, so users can develop control application and HMI software with their own familiar programming environment. With the built-in VGA port, no longer will users be required to build up additional SCADA PC's in their applications. This compact and powerful PC-based controller has been widely applied in variety of industrial automation applications especially ranging from machine automation to SCADA applications.

## Specifications

### Control System

- **CPU** AMD Geode GX533 (GX2)
- **I/O Capacity** 8 slots
- **LED Indicators** Power, User define
- **Memory** 128 MB DDR SDRAM with 1 MB Battery Backup  
1 x CompactFlash® Card (Internal)
- **Operating System** Windows® CE 5.0
- **Real-time Clock** Yes
- **Watchdog Timer** Yes

### Communications

- **Comm. Protocol** Modbus/RTU and Modbus/TCP
- **Medium** 2 x 10/100 Base-T Ethernet Interface with RJ-45 connectors

### Protection

- **Communication** 2,500 V<sub>DC</sub> (COM2 RS-485)/1,000 V<sub>DC</sub> (COM4 RS-485)
- **Power Reversal Protection** Yes

### Power

- **Power Consumption** 12 W @ 24 V<sub>DC</sub> (not including I/O modules)
- **Power Input** Unregulated +10 to +30 V<sub>DC</sub>

### Software

- C and .NET Class Library

### General

- **Certifications** CE, FCC Class A
- **Connectors** 1 x RS-232/485 (COM1)  
1 x RS-485 (COM2)  
1 x RS-232 (COM3)  
1 x RS-232/485 (COM4)  
2 x USB 1.1 ports (KB/Mouse via USB Ports)  
1 x VGA (1024 X 768 Resolution)
- **Dimensions** 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, wall mount (panel mount)
- **Plug-in Screw Terminal** Accepts 0.5 mm<sup>2</sup> to 2.5 mm<sup>2</sup>, 1 - #12 or 2 - #14 to #22 AWG

### Environment

- **Humidity** 5% to 95%, non-condensing
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)

## Ordering Information

- **ADAM-5550CE** 8-slot PC-based Controller with GX2 CPU

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Embedded Controllers

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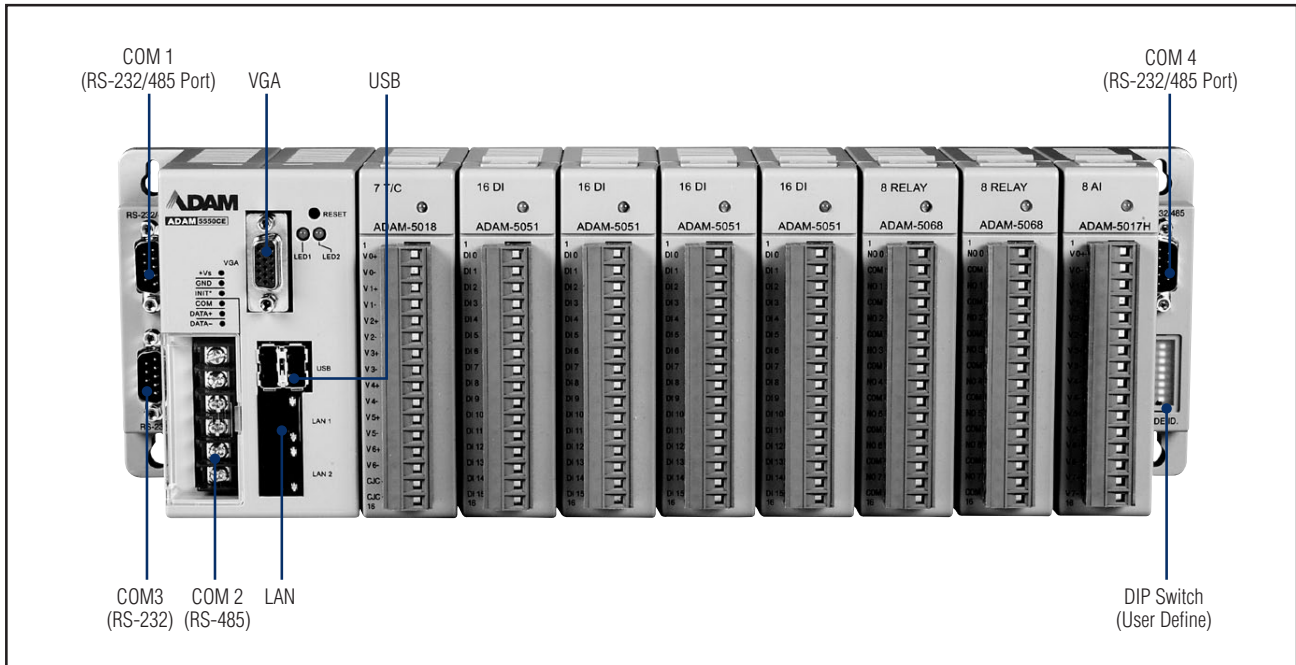
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## Controller Features

ADAM-5550CE is designed for control tasks which need Industrial PC's computing performance and PLC's robustness. Its multiple functionalities include discrete, analog and motion functions. The .NET class libraries provide a flexible and easy-to-use software solution for versatile applications. ADAM-5550CE supports Modbus protocol which allows data exchange with various Modbus devices.

## Visualization

ADAM-5550CE has a built-in VGA port which can directly connect to a display. So HMI function can be integrated into this controller. ADAM-5550CE can be operated with or without display/keyboard/mouse which can meet different requirements of applications.

## Widely Used IT Technology

ADAM-5550CE supports widely used IT technology of industrial PC. For remote monitoring function, the built-in web server can provide local I/O status for internet access and email alarm function can send alarm message to dedicated email addresses when there is any alarm occurs. For remote maintenance function, the built-in FTP server provides service for uploading application program or downloading data logging files.

## Dual Ethernet Ports

ADAM-5550CE provides two Ethernet ports for different application requirements such as redundant Ethernet connection for reliability concern or separated network connections for security concern. Both of the functions are possible to be implemented by customer's application program.

## Remote I/O Expansibility

ADAM-5550CE supports not only Modbus/RTU Master function via serial ports, but also the Modbus/TCP Client to retrieve data from remote I/O, and Modbus/TCP Server to exchange data with other Modbus devices via Ethernet port. This Modbus feature is very useful when the control system needs expand the remote I/O modules or connect to other controllers.

## Rich Support to ADAM-5000 I/O Modules

Most of the ADAM-5000 I/O modules are supported by ADAM-5550CE including analog I/O modules, digital I/O modules, and motion control module. Besides the ADAM-5000 I/O modules, ADAM-5550CE supports new modules including SD slot, COM port with shared interrupt, high speed counter and high density DI/O modules.

## AMONet Motion Control Module

AMONet Module supports two RS-485 master ports, and transfers data between host and slaves directly without any operations in between. Each port of the master can control up to 2048 I/O points, 64 axes, or a combination of I/O points and axes for motion control. The master ports support up to 20 Mbps transfer rate and a maximum communication distance of up to 100 meters. The communication between master and slave is based on a customized RS-485 solution that saves wires, covers a long distance, supports high-speed communication and has time-deterministic features. Various functions can be chosen on the slave modules, and standard industrial DIN rail mounting design makes it easy to distribute them in the field.

## Motion Control Module

ADAM-5550CE supports stepping/pulse-type servo motor control module, which is designed for general-purpose applications. The servo motor control module's intelligent NOVAR MCX314-motion ASIC comes built-in with a variety of motion control functions, such as 2/3-axis linear interpolation, 2-axis circular interpolation, T/S-curve acceleration/deceleration rate and more. It performs these motion control functions without processor loading during driving.

# ADAM-5510/TCP ADAM-5510E/TCP

**4-slot PC-based Controller with Ethernet**

**8-slot PC-based Controller with Ethernet**



RoHS COMPLIANT PRODUCT CE FCC

## Features

- 10/100Base-T Ethernet interface
- Supports Web Server function
- Supports Email Alarm function
- Supports FTP Server and Client functions
- Supports Modbus/TCP Server and Client function libraries
- Supports Modbus/RTU Master and Slave function libraries
- 1.5 MB Flash ROM (960 KB for user applications)
- 640 KB SRAM (384 KB for battery backup)
- ROM-DOS operating system
- Watchdog timer and real-time clock
- 4 serial communication ports
- 4 or 8 I/O slot expansion

## Introduction

In the ADAM-5510 series of PC-based programmable controllers, Advantech has introduced Ethernet-enabled features. The new 4-slot ADAM-5510/TCP and 8-slot ADAM-5510E/TCP support HTTP server, FTP server, and e-mail alarm functions. These functions can be used to monitor a system via the Internet, acquire data through an FTP connection and send alarms to designated e-mail addresses if a critical situation emerges. Both products also support Modbus/TCP server/client functions. The ADAM-5510/TCP and ADAM-5510E/TCP can work as a Modbus/TCP client to retrieve data from remote I/Os, and Modbus/TCP server to connect with the HMI/SCADA software.

## Specifications

### Control System

- CPU** 16-bit processor
- I/O Slots** ADAM-5510/TCP: 4  
ADAM-5510E/TCP: 8
- LED Indicators** Power, CPU, communications, and battery
- Memory** Flash disk: 1 MB (960 KB for user applications)  
Flash memory: 256 KB  
Flash ROM: 256 KB  
RAM: 640 KB SRAM (384 KB for battery backup RAM)
- Operating System** ROM-DOS
- Real-time Clock** Yes
- Watchdog Timer** Yes
- Communications (Ethernet)**
- LAN** 10/100Base-T
- Transmission Distance** 100 m
- Communications (Serial)**
- Max. Nodes** 256 (in RS-485 daisy-chain network)
- Transmission Distance** 1.2 km (4000 feet)
- Transmission Speed** 1200 bps ~ 115.2 kbps

### Protection

- Communication Line Isolation** 2,500 V<sub>DC</sub> (COM2 only)
- Communication Power Isolation** 3,000 V<sub>DC</sub>
- I/O Module Isolation** 3,000 V<sub>DC</sub>

### Software

- C Library** Borland C++ 3.0 for DOS

### Power

- Power Consumption** 4 W @ 24 Vdc (not including I/O modules)  
Unregulated 10 ~ 30 V
- Power Input** Unregulated 10 ~ 30 V<sub>DC</sub>

### General

- Certifications** CE, FCC class A
- Connectors** ADAM-5510/TCP: 1 x DB9-M for RS-232 (COM1)  
ADAM-5510E/TCP: 1 x DB9-M for RS-232/485 (COM1)  
1 x Screw terminal for RS-485 (COM2)  
1 x DB9-F for RS-232/Programming (COM3)  
1 x DB9-M for RS-232/485 (COM4)  
1 x Screw-terminal for power input  
1 x RJ-45 for LAN
- Dimensions** 4-slot: 231 x 110 x 75 mm  
8-slot: 355 x 110 x 75 mm
- Enclosure** ABS+PC
- Mounting** DIN-rail, stack, wall

### Environment

- Humidity** 5 ~ 95%, no-condensing
- Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- Storing Temperature** -25 ~ 85° C (-13 ~ 185° F)

## Ordering Information

- ADAM-5510/TCP** 4-slot PC-based Controller with Ethernet
- ADAM-5510E/TCP** 8-slot PC-based Controller with Ethernet

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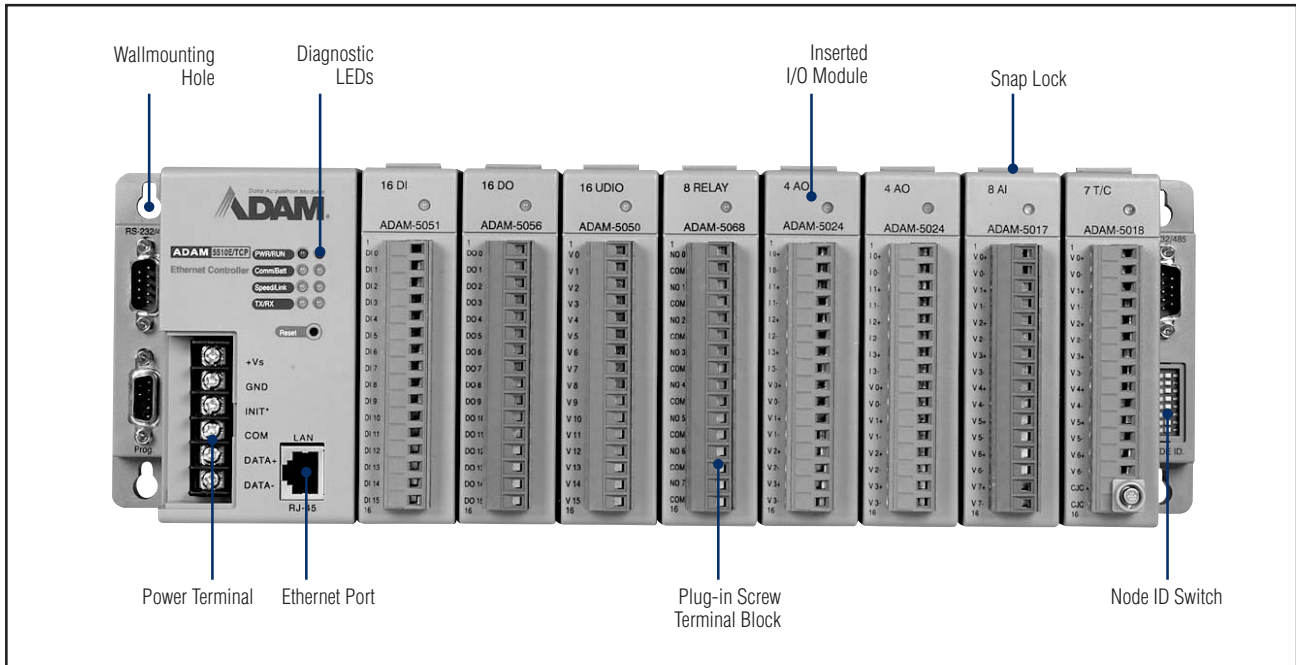
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## ADAM-5510/TCP ADAM-5510E/TCP



## Feature Details

### Supports Powerful Ethernet Features

ADAM-5510/TCP and ADAM-5510E/TCP are Ethernet-enabled Programmable Controllers. The new 4-slot ADAM-5510/TCP and 8-slot ADAM-5510E/TCP support HTTP server, FTP server, and e-mail alarm functions. These functions can be used to monitor a system via the Internet, acquire data through an FTP connection and send alarms to designated e-mail addresses if a critical situation emerges.

### Enable Ethernet Connectivity with Other Devices

ADAM-5510/TCP and ADAM-5510E/TCP support both Modbus/TCP Server function library and Modbus/TCP Client function library. The ADAM-5510/TCP and ADAM-5510E/TCP can work as a Modbus/TCP client to retrieve data from remote I/O modules, and Modbus/TCP server to connect with the HMI/SCADA software.

### More Data Memory & I/O Slots to Support Versatile Applications

The ADAM-5510/TCP and ADAM-5510E/TCP offer more than enough spare memory for developing complex logic or data storage applications, such as data recording, which is difficult for traditional controllers. The ADAM-5510/TCP and ADAM-5510E/TCP feature 1.5 MB flash memory and 640 KB SRAM (up to 384 KB battery backup memory). ADAM-5510/TCP and ADAM-5510E/TCP also support up to 4 or 8 I/O slots for I/O modules, which can provide more flexibility and I/O points for user's applications.

### Complete I/O Module and C Library Support

The ADAM-5510/TCP and ADAM-5510E/TCP support industrial I/O modules including digital I/O, analog I/O, counter and special purpose I/O modules such as Thermocouple and RTD. It also offers well-stocked Borland C libraries, including system resources function, I/O functions, communication functions, socket functions, Modbus/TCP functions, Modbus/RTU functions and the functions of Ethernet features. All the functions have sample programs which can save development time and efforts.

### Supports Four Communication Ports

The ADAM-5510/TCP and ADAM-5510E/TCP has four independent communication ports. That means they can simultaneously communicate with one RS-232/485 device (COM1), one RS-485 device (COM2), one RS-232 3-wire device (COM3), and one RS-232/485 device (COM4). They also support Modbus/RTU master function library for connecting Modbus remote I/O modules and Modbus/RTU slave function library for connecting to HMI/SCADA software.

### Multiple RS-232 Port Support

The ADAM-5090 is a 4-port RS-232 module that is equipped with 4 RS-232 ports, which make it especially suitable for bi-direction communication. It can simultaneously read/write data from other third-party devices such as barcode readers or PLCs, as long as they have an RS-232 interface. Furthermore, commands can be issued through the ADAM-5090 to control other devices. It is fully integrated with the ADAM-5510/TCP and ADAM-5510E/TCP, and transmits data through RS-232 ports. The whole integrated system supports Modbus/RTU master function, which can connect and issue commands to control Modbus remote I/O devices by Modbus/RTU protocol.

# ADAM-5510M ADAM-5510E

4-slot PC-based Controller with RS-485

8-slot PC-based Controller with RS-485



RoHS COMPLIANT PRODUCT CE FCC

## Introduction

The ADAM-5510M AND ADAM-5510E are ideal for PC-based data acquisition and control applications. They are compact, controllers with an Intel x86- based CPU running Datalight ROM-DOS. Built-in battery backup SRAM is the best choice for complex logic or data storage applications. For professional C/C++ programmers, the ADAM-5510M AND ADAM-5510E application programs may be written and compiled in Borland C++ 3.0, and downloaded to the ADAM-5510M AND ADAM-5510E. With the power of the ADAM-5510M AND ADAM-5510E, users can easily accomplish specialized functions, which are difficult with traditional controllers. Each ADAM-5510M AND ADAM-5510E system can handle up to 4 or 8 I/O slots (up to 64 or 128 I/O points).

## Specifications

### Control System

- **CPU** 16-bit microprocessor
- **I/O Slots** ADAM-5510E: 8  
ADAM-5510M: 4
- **LED Indicators** Power, CPU, communications and battery
- **Memory** Flash disk: 1 MB (960 KB for user applications)  
Flash memory: 256 KB  
Flash ROM: 256 KB  
RAM: 640 KB (up to 384 KB with battery backup)
- **Operating System** ROM-DOS (MS-DOS 6.22 Compatible)
- **Real-time Clock** Yes
- **Watchdog Timer** Yes

### Communications

- **Max. Nodes** 256 (in RS-485 daisy-chain network)
- **Transmission Distance** 1.2 km (4000 feet)
- **Transmission Speed** 1,200 bps ~ 115.2 kbps

### Power

- **Power Consumption** 4 W @ 24 Vdc (not including I/O modules)
- **Power Input** Unregulated 10 ~ 30 V<sub>dc</sub>

### Software

- **C Library** Borland C++ 3.0 for DOS

## Features

- Supports Modbus/RTU Master and Slave function libraries
- Windows-based utility
- Control flexibility with C programming
- Complete set of I/O modules
- Built-in 1.5 MB Flash and 640 KB SRAM
- Built-in real-time clock and watchdog timer
- ROM-DOS operating system
- 4 serial communication ports
- 4 or 8 I/O slot expansion

### Protection

- **Communication Power Isolation** 3,000 V<sub>dc</sub>
- **Communication Line Isolation** 2,500 V<sub>dc</sub> (COM2 only)
- **Power Reversal Protection** Yes

### General

- **Certifications** CE, FCC Class A
- **Connectors** ADAM-5510E: 1 x DB9-M for RS-232/485 (COM1)  
ADAM-5510M: 1 x DB9-M for RS-232 (COM1)  
1 x Screw terminal for RS-485 (COM2)  
1 x DB9-F for RS-232/Programming (COM3)  
1 x DB9-M for RS-232/485 (COM4)  
1 x Screw-terminal for power input
- **Dimensions** 4-slot: 231 x 110 x 75 mm  
8-slot: 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, stack, wall

### Environment

- **Humidity** 5 ~ 95%, non-condensing
- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storing Temperature** -25 ~ 85° C (-13 ~ 185° F)

## Ordering Information

- **ADAM-5510M** 4-slot PC-based Controller with RS-485
- **ADAM-5510E** 8-slot PC-based Controller with RS-485

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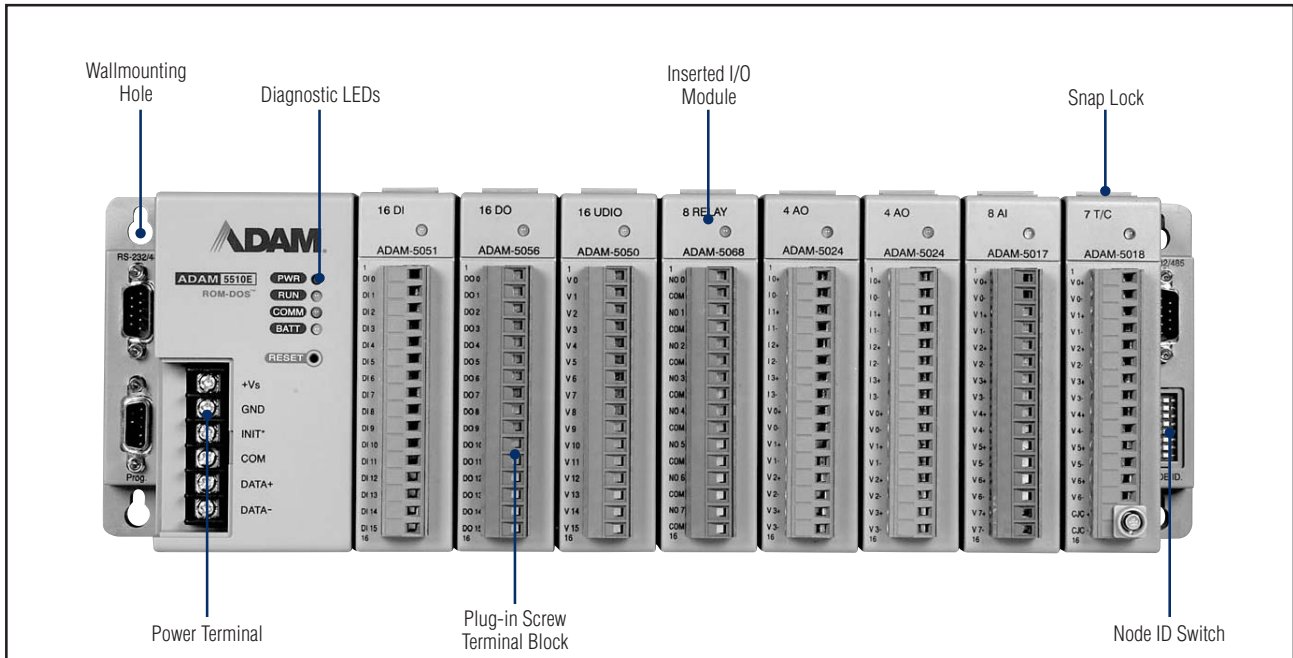
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## Why PC-based Control?

Today, more and more major manufacturers are gaining a competitive edge by replacing their factory floor PLC "black boxes" and utilizing the latest advances in automation control technology. One of the major drawbacks of the PLC is its proprietary nature. Not only is the PLC proprietary, but so is everything associated with it – the hardware, the operating system, the programming methods, the networks, the processors, the I/O, and more. Once you have selected a PLC supplier, you are essentially locked into their product line. This exclusivity limits how far you can expand your operations – and expand your business – since you can only grow as far as your supplier's technology will let you. On the other hand, PC-based controllers are designed as an open structure with advanced capabilities for computing, communication and controlling. There will be no more limitation to user's further integration and expansion.

## PC-based "C" Programmable Controller

The design of the ADAM-5510M and ADAM-5510E are based on the experience of various needs in industrial control. The ADAM-5510M and ADAM-5510E adopt a popular RS-485 bus, which can work either as a standalone unit or within a distributed control system. The user only needs to write a program in C to run on the ADAM-5510M and ADAM-5510E for a general-purpose application.

## Windows-based Utility for Configuring I/O Modules

The ADAM-5510M and ADAM-5510E utility is fully-Windows based so users can configure the I/O modules and download control program under Windows environment easily. In order to provide a convenience operation environment for former users, the Windows Utility keeps the DOS mode operation interface too.

## More Data Memory and I/O Slots to Support Versatile Applications

The ADAM-5510M and ADAM-5510E offer plenty of spare memory for developing complex logic or data storage applications, such as data recording, which is difficult for traditional controllers. The ADAM-5510M and ADAM-5510E features 1.5 MB flash memory and 640 KB SRAM (up to 384 KB battery backup memory). ADAM-5510M and ADAM-5510E also support up to 4 or 8 I/O slots for I/O modules, which can provide more flexibility and I/O points for user's applications.

## Modbus/RTU Master and Slave Function Libraries

The ADAM-5510M and ADAM-5510E has four independent communication ports. That means they can simultaneously communicate with one RS-232/485 device (COM1), one RS-485 device (COM2), one RS-232 3-wire device (COM3), and one RS-232/485 device (COM4). They also support Modbus/RTU master function library for connecting Modbus remote I/O modules and Modbus/RTU slave function library for connecting to HMI/SCADA software.

## Complete I/O Module and C Library Support

The ADAM-5510M and ADAM-5510E support industrial I/O modules including digital I/O, analog I/O, counter and special purpose I/O modules such as Thermocouple and RTD. It also offers well-stocked Borland C libraries, including system resources function, I/O functions, communication functions and Modbus/RTU functions. All the functions have sample programs which can save the developing time and efforts.

## Multiple RS-232 Port Support

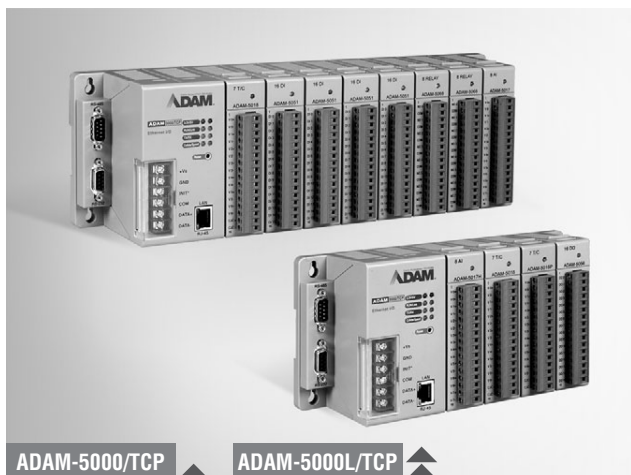
The ADAM-5090 is a 4-port RS-232 module that is equipped with 4 RS-232 ports, which make it especially suitable for bi-direction communication. It can simultaneously read/write data from other third-party devices such as barcode readers or PLCs, as long as they have an RS-232 interface. Furthermore, commands can be issued through the ADAM-5090 to control other devices. It is fully integrated with the ADAM-5510M and ADAM-5510E, and transmits data through RS-232 ports. The whole integrated system supports Modbus/RTU master function, which can connect and issue commands to control Modbus remote I/O devices by Modbus/RTU protocol.

# ADAM-5000L/TCP

# ADAM-5000/TCP

**4-slot Distributed DA&C System  
for Ethernet**

**8-slot Distributed DA&C System  
for Ethernet**



ADAM-5000/TCP

ADAM-5000L/TCP



## Features

- ARM 32-bit RISC CPU
- 10/100Base-T auto-negotiation high-speed communication port
- Supports Modbus/TCP for easy integration
- Supports UDP event handling function
- Up to 100 m communication distance w/o repeater
- Allows remote configuration via Ethernet
- Allows concurrent access for 8 host PCs
- 4 I/O slots for up to 64 points and 8 I/O slots for up to 128 points data monitoring and control
- 1500 V<sub>DC</sub> isolation for Ethernet communication
- Built-in watchdog timer for system auto-reset
- Windows utility
  - I/O modules configuration and calibration
  - Network auto searching
  - Data stream setting
  - Current status monitoring and alarm trigger
- Provides C and .NET class library to develop applications

## Introduction

ADAM-5000L/TCP and ADAM-5000/TCP are both Ethernet-based I/O systems. Without a repeater, ADAM-5000L/TCP and ADAM-5000/TCP can cover a communication distance up to 100 m. This allows remote configuration via Ethernet and eight PCs can simultaneously access the data. The ADAM-5000L/TCP and ADAM-5000/TCP are the solutions for easy configuration and efficient management. It is an ideal and cost-effective solution for eAutomation architecture.

## Specifications

### Control System

- CPU** 32-bit ARM RISC
- I/O Slots** ADAM-5000L/TCP: 4  
ADAM-5000/TCP: 8
- Memory** Flash ROM: 512 KB  
RAM: 4 MB
- Operating System** Real-time OS
- LED Indicators** Power (3.3 V, 5 V)  
CPU  
Communication (Link, Active, 10/100 Mbps, Tx, Rx)  
Battery

### Communications (Ethernet)

- Data Transfer Rate** Up to 100 Mbps
- Event Response Time** < 5 ms
- Interface** 1 x 10/100Base-T (RJ-45)
- Wiring** UTP, category 5 or greater

### Communications (Serial)

- Comm. Distance** RS-485: 1.2 km (4000 feet)  
RS-232: 15 m
- Comm. Protocol** Modbus/RTU
- Data Transfer Rate** Up to 115.2 kbps
- Interface** 1 x DB9-M for RS-485  
1 x DB9-F for RS-485  
1 x DB9-F for RS-232
- Max. Nodes** 12 (in RS-485 daisy-chain network for Remote I/O connection)

### Power

- Power Consumption** 4.0 W @ 24 V<sub>DC</sub> (ADAM-5000L/TCP)  
(not including I/O modules)  
5.0 W @ 24 V<sub>DC</sub> (ADAM-5000/TCP)  
(not including I/O modules)
- Power Input** Unregulated 10 ~ 30 V<sub>DC</sub>

### Software

- C and .NET Class Library**
- Windows Utility** Network setting, I/O configuration & calibration, data stream, alarm setting
- Modbus/TCP OPC Server**

### Protection

- Communication Line Isolation** 3.000 V<sub>DC</sub>
- I/O Module Isolation** 3.000 V<sub>DC</sub>
- LAN Communication** 1.500 V<sub>DC</sub>
- Overvoltage Protection** Yes
- Power Reversal Protection** Yes

### General

- Certifications** CE, FCC class A
- Connectors** 1 x DB9-M/DB9-F/screw terminal for RS-485 (communication)  
1 x DB9-F for RS-232 (internal use)  
1 x Screw-terminal for power input  
1 x RJ-45 for LAN
- Dimensions (W x H x D)** ADAM-5000L/TCP: 231 x 110 x 75 mm  
ADAM-5000/TCP: 355 x 110 x 75 mm
- Enclosure** ABS+PC
- Mounting** DIN-rail, wall

### Environment

- Humidity** 5 ~ 95%, non-condensing
- Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)

## Ordering Information

- ADAM-5000L/TCP** 4-slot Ethernet-based Distributed DA & C System
- ADAM-5000/TCP** 8-slot Ethernet-based Distributed DA & C System

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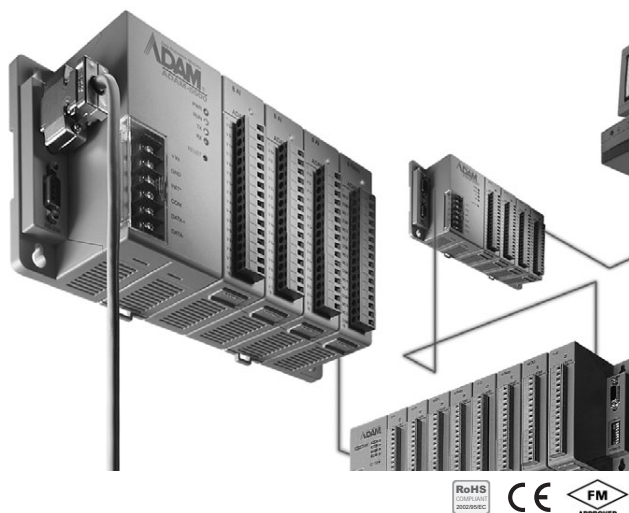
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# ADAM-5000/485 ADAM-5000E

**4-slot Distributed DA&C System  
for RS-485**

**8-slot Distributed DA&C System  
for RS-485**



## Features

- RS-485 communication for easy installation and networking
- 4 or 8 slots for up to 128 points data monitoring card control in one module
- Extensive software support, includes windows DLL drivers, OCX drivers, OPC server and popular HMI/SCADA software drivers
- Seamlessly integrated with easy-to-use ADAMView data acquisition software
- Supports ADAM ASCII protocol or Modbus®/RTU protocol
- Supports Modbus/RTU protocol with user-defined Modbus address

## Introduction

The ADAM-5000/485 and ADAM-5000E systems conform to the EIA RS-485 communication standard. This is the industry's most widely used, balanced, bidirectional transmission line standard. RS-485 was specifically developed for industrial applications to transmit and receive data at high rates over long distances.

## Specifications

### Control System

- **CPU** 16-bit 80188 microprocessor
- **I/O Slots** ADAM-5000/485: 4  
ADAM-5000E: 8
- **LED Indicators** Power, CPU, communications
- **Watchdog Timer** 1.6 sec. (System)

### Communications

- **Command Format** ASCII command/response protocol, Modbus/RTU
- **Communication Distance** RS-485: 1.2 km (4000 feet)
- **Data Format** Asynchronous. 1 start bit, 8 data bits, 1 stop bit, no parity
- **Network Protocols** Programming link: RS-232 (3-wire: TX, RX, GND)  
Communication: RS-485 (2-wire)
- **Reliability Check** Communication error checking with checksum
- **Max. Nodes** 128 (in RS-485 daisy-chain network)
- **Speeds (kbps)** 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, and 115.2

### Power

- **Power Consumption** 3 W @ 24 Vdc (ADAM-5000/485)  
(not including I/O modules)  
4.0 W @ 24 Vdc (ADAM-5000E)  
(not including I/O modules)
- **Power Input** Unregulated 10 ~ 30 V<sub>dc</sub>

### Software

- **Driver Support** Windows DLL, OPC Server, Wonderware InTouch, Intellution, iFIX, Citect, Advantech Studio, ADAMView
- **C and .NET Class Library**

### Protection

- **Communication Line Isolation** 2,500 V<sub>dc</sub> (ADAM-5000/485)  
3,000 V<sub>dc</sub> (ADAM-5000E)
- **I/O Module Isolation** 3,000 V<sub>dc</sub>
- **Transient Protection** RS-485 communication lines, power input
- **Power Reversal Protection** Yes

### General

- **Certifications** CE, FM
- **Connectors** 1 x DB9-M/DB9-F/screw terminal for RS-485 (communication)  
1 x DB9-F for RS-232 (configuration)  
1 x Screw-terminal for power input
- **Dimensions (WxHxD)** 4-slot: 231 x 110 x 75 mm  
8-slot: 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN-rail, wall, rack (with mounting kit)

### Environment

- **Humidity** 5 ~ 95%, non-condensing
- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storing Temperature** -25 ~ 85° C (-13 ~ 185° F)

## Ordering Information

- **ADAM-5000/485** 4-slot Distributed DA & C System for RS-485
- **ADAM-5000E** 8-slot Distributed DA & C System for RS-485

# ADAM-5090/5091

## ADAM-5095

**4-port RS-232 Module**  
**2-port CAN Module with**  
**Isolation Protection**



ADAM-5090

ADAM-5091



### Specifications

#### General

- **Certifications** CE, FCC Class A (ADAM-5091 only), FM
- **Connectors** 4 x RJ-45
- **Enclosure** ABS+PC
- **LED Indicators** TX, RX (each port)
- **Power Consumption** 0.6 W (max.)

#### Communications

- **Data Bits** 5, 6, 7, 8
- **Data Signals** Tx/D, Rx/D, RTS, TS, DTR, DSR, DCD, RI, GND
- **Parity** none, even, odd
- **Ports** 4
- **UARTs** 1 x 16C954 (128-byte FIFO)
- **Speed** 50 ~ 115.2 kbps
- **Stop Bits** 1, 1.5, 2
- **Support standard Com Port with Share interrupt (ADAM-5091)**

#### Note:

For ADAM-5510 Series, ADAM-5510KW Series, and ADAM-5511 only (ADAM-5090)  
 For ADAM-5550 Series (ADAM-5091)

### Ordering Information

- **ADAM-5090** 4-port RS-232 Module
- **ADAM-5091** 4-port RS-232 Module with Share Interrupt
- **OPT1A** 1 m RJ-48 to Male DB9 Cable
- **OPT1D** 30 cm RJ-48 to Male DB9 Cable



ADAM-5095



### Specifications

#### General

- **Certifications** CE, FCC Class A
- **Connector** 2 x DB9-M
- **Enclosure** ABS+PC
- **LED Indicator** TX (Yellow), RX (Green) For Each Port
- **Power Consumption** 1 W (max.)

#### Communications

- **CAN Controller** SJA-1000
- **CAN Transceiver** 82C250
- **Protocol** CAN2.0 A/B
- **Signal Support** CAN-H, CAN-L
- **Speed** 1Mbps

#### Protection

- **Isolation Protection** 1,000 V<sub>DC</sub>

#### Note:

only for ADAM-5550 series

### Ordering Information

- **ADAM-5095** 2-port CAN Module with Isolation Protection

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# ADAM-5013

# ADAM-5017

# ADAM-5017P

## 3-ch RTD Input Module

## 8-ch Analog Input Module

## 8-ch Analog Input Module with Independent Input Range



ADAM-5013



ADAM-5017



ADAM-5017P



### Specifications

#### General

- **Certifications** CE
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 1.1 W (max.)

#### RTD Input

- **Accuracy**  $\pm 0.1\%$  or better
- **Bandwidth** 13.1 Hz @ 50 Hz  
15.72 Hz @ 60 Hz
- **Channels** 3
- **CMR @ 50/60 Hz** 150 dB
- **Input Connections** 2, 3 or 4 wire
- **Input Impedance** 2 M $\Omega$
- **Input Type** PT100 or Ni RTD
- **NMR @ 50/60 Hz** 100 dB
- **Resolution** 16-bit
- **RTD Types and Temperature Ranges**

IEC RTD 100 ohms			
Pt	-100° C	to	+100° C
a=	0.00385		
Pt	0° C	to	+100° C
a=	0.00385		
Pt	0° C	to	+200° C
a=	0.00385		
Pt	0° C	to	+600° C
a=	0.00385		
JIS RTD 100 ohms			
Pt	-100° C	to	+100° C
a=	0.00392		
Pt	0° C	to	+100° C
a=	0.00392		
Pt	0° C	to	+200° C
a=	0.00392		
Pt	0° C	to	+600° C
a=	0.00392		
Ni RTD			
Ni	-80° C	to	+100° C
Ni	0° C	to	+100° C
- **Sampling Rate** 10 samples/sec. (total)
- **Span Drift**  $\pm 0.01^\circ \text{C}/^\circ \text{C}$
- **Zero Drift**  $\pm 0.015^\circ \text{C}/^\circ \text{C}$

#### Protection

- **Isolation Voltage** 3000 V<sub>DC</sub>

### Ordering Information

- **ADAM-5013** 3-ch RTD Input Module

### Specifications

#### General

- **Certifications** CE, FM
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 1.25 W (max.)

#### Analog Input

- **Accuracy** Voltage mode:  $\pm 0.1\%$  or better  
Current mode:  $\pm 0.2\%$  or better
- **Bandwidth** 13.1 Hz @ 50 Hz  
15.72 Hz @ 60 Hz
- **Channels** 8 differential
- **CMR @ 50/60 Hz** 92 dB min.
- **Input Impedance** Voltage: 2 M $\Omega$   
Current: 120 $\Omega$  (Build-in 120  $\Omega$  register for Current input)
- **Input Range**  $\pm 150 \text{ mV}$ ,  $\pm 500 \text{ mV}$ ,  $\pm 1 \text{ V}$ ,  $\pm 5 \text{ V}$ ,  $\pm 10 \text{ V}$ ;  $\pm 20 \text{ mA}$
- **Resolution** 16-bit
- **Sampling Rate** 10 samples/sec. (total)
- **Span Drift**  $\pm 25 \text{ PPM}/^\circ \text{C}$
- **Zero Drift**  $\pm 6 \mu\text{V}/^\circ \text{C}$

#### Protection

- **Isolation Voltage** 3,000 V<sub>DC</sub>
- **Fault and Overvoltage Protection** Withstands overvoltage up to  $\pm 35 \text{ V}$

**Note:** The voltage difference between any two pins must not exceed  $\pm 15 \text{ V}$

### Ordering Information

- **ADAM-5017** 8-ch Analog Input Module

### Specifications

#### General

- **Certifications** CE, FCC Class A
- **Connectors** 1 x Plug-in terminal block (#14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 1.25 W (max.)

#### Analog Input

- **Accuracy** Voltage mode:  $\pm 0.1\%$  or better  
Current mode:  $\pm 0.2\%$  or better
- **Channels** 8 (differential, each channel can be configured with different range)
- **CMR @ 50/60 Hz** 92 dB min.
- **Input Impedance** Voltage: 20 M $\Omega$   
Current: 120  $\Omega$  (Build-in 120  $\Omega$  register for Current Input)
- **Input Range** 0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 15 V,  $\pm 150 \text{ mV}$ ,  $\pm 500 \text{ mV}$ ,  $\pm 1 \text{ V}$ ,  $\pm 5 \text{ V}$ ,  $\pm 10 \text{ V}$ ,  $\pm 15 \text{ V}$ ,  $\pm 20 \text{ mA}$ , 4 ~ 20 mA
- **Resolution** 16 bits
- **Sampling Rate** 10 samples/sec. (total)
- **Span Drift**  $\pm 25 \text{ ppm}/^\circ \text{C}$
- **Zero Drift**  $\pm 6 \mu\text{V}/^\circ \text{C}$
- **High Common Mode** 200 V<sub>DC</sub>

#### Protection

- **Over Voltage Protection**
- **Built-in TVS/ESD Protection**
- **Isolation Voltage** 3,000 V<sub>DC</sub>

**Note:** Does not support ADAM-5510KW

### Ordering Information

- **ADAM-5017P** 8-ch Analog Input Module w/ Ind. Input Range

# ADAM-5017UH

# ADAM-5018

# ADAM-5018P

## 8-ch Ultra High Speed Analog Input Module

## 7-ch Thermocouple Input Module

## 7-ch Thermocouple Input Module with Independent Input Range



ADAM-5017UH



ADAM-5018



ADAM-5018P



### Specifications

#### General

- **Certifications** CE
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 2.2 W (max.)

#### Analog Input

- **Accuracy**  $\pm 0.1\%$  or better
- **Bandwidth** 200 kHz
- **Channels** 8 differential
- **Differential Non-linearity**  $\pm 1$  LSB
- **Input Impedance** Voltage: 2 M $\Omega$   
Current: 120  $\Omega$   
(Build-in 12  $\Omega$  register for Current Input)

#### Integral Non-linear

- **Input Range**  $\pm 1$  LSB  
 $\pm 10$  V,  $+0 \sim 10$  V,  
 $0 \sim 20$  mA,  $+4 \sim 20$  mA  
Configured by User
- **Low pass filter**
- **Resolution** 12-bit
- **Sampling Rate** Depends on base unit

- ADAM-5000/485 & 5000E:  
100 Samples/sec max (Total): one ADAM-5017UH installed
- ADAM-5000/TCP:  
100 Samples/sec max (Total): one ADAM-5017UH installed
- ADAM-5510:  
200K Samples/sec max (Single Channel): one ADAM-5017UH installed
- ADAM-5550:  
1K Samples/sec per channel: one ADAM-5017UH installed
- \*Depending on the performance of client server or controller
- **Signal Input Bandwidth** 200 kHz for both voltage and current inputs

#### Protection

- **Isolation Voltage** 3,000 V<sub>DC</sub>

#### Note:

- 1) The voltage difference between any two pins must not exceed 15 V
  - 2) Distinct range settings allowed on each channel
- Note: Not support ADAM-5510KW series

### Ordering Information

- **ADAM-5017UH** 8-ch Ultra High Speed Analog Input Module

### Specifications

#### General

- **Certifications** CE, FM
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 0.63 W (max.)

#### Thermocouple Input

- **Accuracy**  $\pm 0.1\%$  or better
- **Bandwidth** 13.1 Hz @ 50 Hz  
15.72 Hz @ 60 Hz  
7 differential
- **Channels** 92 dB min
- **CMR @ 50/60 Hz**
- **Input Impedance** 2 M $\Omega$
- **Input Range**  $\pm 15$  mV,  $\pm 50$  mV,  $\pm 100$  mV,  
 $\pm 500$  mV,  
 $\pm 1$  V,  $\pm 2.5$  V,  $\pm 20$  mA

#### Input Type

- **Resolution** mV, V, mA, thermocouple
- **Resolution** 16-bit
- **Sampling Rate** 10 samples/sec. (total)
- **Span Drift**  $\pm 25$  PPM/ $^{\circ}$  C
- **Zero Drift**  $\pm 6$   $\mu$ V/ $^{\circ}$  C

#### T/C Type and Temperature Range

J	0 $^{\circ}$	~	760 $^{\circ}$ C
K	0 $^{\circ}$	~	1,370 $^{\circ}$ C
T	-100 $^{\circ}$	~	400 $^{\circ}$ C
E	0 $^{\circ}$	~	1,000 $^{\circ}$ C
R	500 $^{\circ}$	~	1,750 $^{\circ}$ C
S	500 $^{\circ}$	~	1,750 $^{\circ}$ C
B	500 $^{\circ}$	~	1,800 $^{\circ}$ C

#### Protection

- **Fault and Overvoltage Protection** Withstands overvoltage up to  $\pm 35$  V
- **Isolation Voltage** 3,000 V<sub>DC</sub>

### Ordering Information

- **ADAM-5018** 7-ch Thermocouple Input Module
- **ADAM-5018SK** CJC Kit for ADAM-5018

### Specifications

#### General

- **Certifications** CE, FCC class A
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 0.63 W (max.)

#### Thermocouple Input

- **Accuracy** Voltage mode:  $\pm 0.1\%$  or better  
Current mode:  $\pm 0.2\%$  or better
- **Bandwidth** 13.1 Hz @ 50 Hz  
15.72 Hz @ 60 Hz
- **Channels** 7 (differential, each channel can be configured with different range)
- **CMR @ 50/60 Hz** 92 dB min
- **Input Impedance** 20 M $\Omega$ . (Build-in 120  $\Omega$  Register for Current Input)

#### Input Range and Types

Thermocouple			
J	0	~	760 $^{\circ}$ C
K	0	~	1,370 $^{\circ}$ C
T	-100	~	400 $^{\circ}$ C
E	0	~	1,000 $^{\circ}$ C
R	500	~	1,750 $^{\circ}$ C
S	500	~	1,750 $^{\circ}$ C
B	500	~	1,800 $^{\circ}$ C

Current	$\pm 20$ mA, 4 ~ 20 mA
Voltage	$\pm 15$ mV (0.2%), $\pm 50$ mV, $\pm 100$ mV, $\pm 500$ mV $\pm 1$ V, $\pm 2.5$ V

- **Resolution** 16-bit
- **Sampling Rate** 10 samples/sec. (total)
- **Span Drift**  $\pm 25$  PPM/ $^{\circ}$  C
- **Zero Drift**  $\pm 6$   $\mu$ V/ $^{\circ}$  C
- **High Common Mode** 200 V<sub>DC</sub>

#### Protection

- **Fault and Overvoltage Protection** Withstands overvoltage up to  $\pm 35$  V
- **Isolation Voltage** 3,000 V<sub>DC</sub>
- **Filter function** Yes
- **Built-in TVS/ESD Protection**

Note: Not support ADAM-5510KW series

### Ordering Information

- **ADAM-5018P** 7-ch Thermo. Input Module w/ Ind. Input Range

19	Embedded Controllers
20	PC-based Controllers
21	PAC
22	Motion Control
23	RS-485 I/O
24	Ethernet I/O
25	Building Automation
26	Self-service Terminals
27	eHome Platforms

# ADAM-5024

# ADAM-5050

# ADAM-5051/D/S

## 4-ch Analog Output Module

## 16-ch Universal Digital I/O Module

## 16-ch Digital Input Module



ADAM-5024



ADAM-5050



ADAM-5051  
ADAM-5051D  
ADAM-5051S



## Specifications

### General

- **Certifications** CE, FM
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 2.9 W (max.)

### Analog Output

- **Accuracy**  $\pm 0.1\%$  of FSR for current output  
 $\pm 0.2\%$  of FSR for voltage output
- **Channels** 4
- **Current Load Resistor** 0 ~ 500  $\Omega$  (source)
- **Output Type** mA, V
- **Output Range** 0 ~ 20 mA, 4 ~ 20 mA, 0 ~ 10 V
- **Programmable Output Slope** 0.125 ~ 128.0 mA/sec.  
0.0625 ~ 64.0 V/sec.
- **Resolution** 12-bit
- **Resolution**  $\pm 0.015\%$  of FSR
- **Span Temperature Coefficient**  $\pm 25$  PPM/ $^{\circ}$ C
- **Zero Drift** Voltage:  $\pm 30$   $\mu$ V/ $^{\circ}$ C  
Current:  $\pm 0.2$   $\mu$ A/ $^{\circ}$ C

### Protection

- **Isolation Voltage** 3,000 V<sub>DC</sub>

## Ordering Information

- **ADAM-5024** 4-ch Analog Output Module

## Specifications

### General

- **Certifications** CE, FM
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 1.2 W (max.)

### Digital I/O

- **Channels** 16
- **Channel I/O Type** Bit-wise selectable by DIP switch
- **Digital Input** Dry Contact:  
Logic level 0: close to GND  
Logic level 1: open  
Wet Contact:  
Logic level 0: 2 V max.  
Logic level 1: 4 ~ 30 V
- **Digital Output** Open collector to 30 V,  
100 mA and 450 mW max.  
load
- **Power Dissipation** 300 mW for each channel

## Ordering Information

- **ADAM-5050** 16-ch Universal Digital Input/Output Module

## Specifications

### General

- **Certifications** CE
- **Connectors** ADAM-5051/5051D: 1 x Plug-in screw terminal (# 14 ~ 22 AWG)  
ADAM-5051S: 1 x Plug-in screw terminal (# 14 ~ 28 AWG)
- **Enclosure** ABS+PC
- **LED Indicators** ADAM-5051D On: Input logic level 1  
Input floating  
Off: Input logic level 0  
ADAM-5051S On: Active  
Off: Inactive
- **Power Consumption** ADAM-5051: 0.53 W (max.)  
ADAM-5051D: 0.84 W (max.)  
ADAM-5051S: 0.8 W (max.)

### Digital Input

- **Circuit Type** Pull-up current: 0.5 mA (Source Type) - only for ADAM-5051/5051D
- **Channels** 16
- **Input Voltage** ADAM-5051/5051D: 30 V<sub>max</sub>  
ADAM-5051S: 50 V<sub>max</sub>
- **Logic Level** ADAM-5051/5051D Logic level 0: 1 V max.  
Logic level 1: 3.5 ~ 30 V  
ADAM-5051S Logic level 0: 3 V max.  
Logic level 1: 10 ~ 50 V

### Protection (Only for ADAM-5051S)

- **Optical Isolation** 2,500 V<sub>DC</sub>
- **Overvoltage Protection** 70 V<sub>DC</sub>

## Ordering Information

- **ADAM-5051** 16-ch Digital Input Module
- **ADAM-5051D** 16-ch Digital Input Module w/ LED
- **ADAM-5051S** 16-ch Isolated Digital Input Module w/ LED

# ADAM-5052 ADAM-5053S ADAM-5055S

8-ch Isolated Digital Input Module

32-ch Isolated Digital Input Module

16-ch Isolated Digital I/O Module with LED



ADAM-5052



ADAM-5053S



ADAM-5055S



## Specifications

### General

- **Certifications** CE, FM
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 0.27 W (max.)

### Digital Input

- **Channels** 8
- **Input Resistance** 3 k $\Omega$ /0.5 W
- **Logic Level** Logic level 0: 1 V<sub>max</sub>  
Logic level 1: 3.5 ~ 30 V

### Protection

- **Isolation Voltage** 5000 V<sub>RMS</sub>

## Ordering Information

- **ADAM-5052** 8-ch Isolated Digital Input Module

## Specifications

### General

- **Certifications** CE, FCC class A
- **Connector** 40 pin
- **Enclosure** ABS+PC
- **Power Consumption** 1 W (max.)

### Digital Input

- **Channels** 32
- **Channel I/O Type** DI  
24 Vdc (Sink/Source)

### Logic Level

- **Wet Contact** Logic level 0: 10 V Max.  
Logic level 1: 19 ~ 35 V

### Protection

- **Isolation Voltage** 2,500 V<sub>DC</sub>
- **Overvoltage Protection** 35 V<sub>DC</sub>

Note: only for ADAM-5550 Series

## Ordering Information

- **ADAM-5053S** 32-ch Digital Input Module
- **ADAM-3920** 20-pin Flat Cable Wiring Board
- **PCL-10220** 40-pin IDC to two 20-pin IDC cable, 1 m

## Specifications

### General

- **Certifications** CE
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 28 AWG)
- **Enclosure** ABS+PC
- **LED Indicators** On: Active  
Off: Inactive
- **Power Consumption** 0.68 W (max.)

### Digital I/O

- **Channels** 16
- **Channel I/O Type** 8 DO, 8 DI
- **Digital Input** Dry contact:  
Logic level 0: open  
Logic level 1: close to GND  
Wet contact:  
Logic level 0: 3 V max.  
Logic level 1: 10 ~ 50 V
- **Digital Output** Open collector to 40 V  
200 mA max. load
- **Power Dissipation** Channel : 1 W max.  
Total : 2.2 W  
(8 channels)

### Protection

- **Isolation Voltage** 2,500 V<sub>DC</sub>
- **Overvoltage Protection** 70 V<sub>DC</sub> (DI only)

## Ordering Information

- **ADAM-5055S** 16-ch Isolated Digital I/O Module with LED

19	Embedded Controllers
20	PC-based Controllers
21	PAC
22	Motion Control
23	RS-485 I/O
24	Ethernet I/O
25	Building Automation
26	Self-service Terminals
27	eHome Platforms

# ADAM-5056/D/S

# ADAM-5056S0

# ADAM-5057S

16-ch Digital Output Module  
16-ch Source-type Isolated  
Digital Output Module with LED

32-ch Isolated Digital Output Module



## Specifications

### General

- **Certifications** CE, FCC class A (ADAM-5056S only)
- **Connectors**
  - ADAM-5056/5056D 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
  - ADAM-5056S 1 x Plug-in screw terminal (# 14 ~ 28 AWG)
- **Enclosure** ABS+PC
- **LED Indicators**
  - ADAM-5056D On: output logic level "1"  
Off: output logic level "0"
  - ADAM-5056S On: active  
Off: inactive
- **Power Consumption** ADAM-5056: 0.53 W (max.)  
ADAM-5056D: 0.84 W (max.)  
ADAM-5056S: 0.6 W (max.)

### Digital Output

- **Channels** 16
- **Digital Output**
  - ADAM-5056/5056D Open collector to 30 V, 100 mA max. load
  - ADAM-5056S Open collector to 40 V, 200 mA max. load (sink)
- **Operating Voltage** ADAM-5056/5056D: 30 V<sub>max</sub>
- **Power Dissipation** 300 mW for each channel
- **Protection (Only for ADAM-5056S)**
  - Optical Isolation 2500 V<sub>DC</sub>
  - Overvoltage Protection 70 V<sub>DC</sub>
  - Power Dissipation 300 mW

## Ordering Information

- **ADAM-5056** 16-ch Digital Output Module
- **ADAM-5056D** 16-ch Digital Output Module with LED
- **ADAM-5056S** 16-ch Sink Type Iso. DO Module w/ LED

## Specifications

### General

- **Certifications** CE, FCC class A
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 28 AWG)
- **Enclosure** ABS+PC
- **LED Indicator** On: active  
Off: inactive
- **Power Consumption** 0.6 W (Max.)
- **Digital Output**
  - **Channels** 16
  - **Digital Output** 10 ~ 35 V<sub>DC</sub>
  - **Current** 200 mA max. (per channel)
  - **Power Dissipation** Channel : 1 W max.  
Total : 2.2 W (8 channels)

### Protection

- **Optical Isolation** 2,500 V<sub>DC</sub>
- **Overvoltage Protection** 70 V<sub>DC</sub>

## Ordering Information

- **ADAM-5056S0** 16-ch Source Type Iso. DO Module w/ LED

## Specifications

### General

- **Certifications** CE, FCC class A
- **Connectors** 1 x 40 pin (wiring line)
- **Enclosure** ABS+PC
- **LED Indicator** On: active  
Off: inactive
- **Power Consumption** 1W (Max.)

### Digital Output

- **Channels** 32
- **Digital Output** Must connect with 2 units of ADAM-3920R

### Protection

- **Optical Isolation** 2,500 V<sub>DC</sub>
- **Overvoltage Protection** 70 V<sub>DC</sub>

### Relay Spec. of ADAM-3920R

- **Contact Rating** 10A @ 250 V<sub>AC</sub>  
10A @ 30 V<sub>DC</sub>
- **Contact Resistance** 100 mΩ
- **Operation Time** 15 ms
- **Relay Type SPST** (Form A)
- **Release Time** 5 ms max
- **Life Expectancy** 1.7 x 10<sup>6</sup> at related load
- **Insulation Resistance** 1GΩ @ 500 V<sub>DC</sub>
- **Power Input** +24 V<sub>DC</sub>
- **Mounting** DIN 35 rail, wall, rack (with mounting kit)

**Note:** ADAM-5057S must connect with 2 units of ADAM-3920R via PCL-10220

**Note:** only for ADAM-5550 Series

## Ordering Information

- **ADAM-5057S** 32-ch Digital Output Module
- **ADAM-3920R** 20-pin Flat Cable Wiring Relay Board
- **PCL-10220** 40-pin IDC to two 20-pin IDC cable, 1m

# ADAM-5060

# ADAM-5069

## 6-ch Relay Output Module

## 8-ch Power Relay Output Module with LED



ADAM-5060



### Specifications

#### General

- **Certifications** CE
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 1.8 W (max.)

#### Relay Output

- **Breakdown Voltage** 500 V<sub>AC</sub> (50/60 Hz)
- **Channels** 2 x form A, 4 x form C
- **Contact Rating**
  - AC: 125 V @ 0.6 A
  - DC: 30 V @ 2 A
  - 110 V @ 0.6 A
- **Insulation Resistance** 1 GΩ min. @ 500 V<sub>DC</sub>
- **Relay Off Time (typical)** 2 ms
- **Relay On Time (typical)** 3 ms
- **Total Switching Time** 10 ms

### Ordering Information

- **ADAM-5060** 6-ch Relay Output Module



ADAM-5069



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **LED Indicator**
  - On: Active
  - Off: Non-active
- **Power Consumption** 2.2 W (max.)

#### Relay Output

- **Breakdown Voltage** 750 V<sub>AC</sub> (50/60 Hz)
- **Channels** 8 x form A
- **Contact Rating**
  - AC: 250 V @ 5 A
  - DC: 30 V @ 5 A
- **Insulation Resistance** 1 GΩ @ 500 V<sub>DC</sub>
- **Relay On Time (typical)** 5 ms
- **Relay Off Time (typical)** 5.6 ms

### Ordering Information

- **ADAM-5069** 8-ch Power Relay Output Module w/ LED

19	Embedded Controllers
20	PC-based Controllers
21	PAC
22	Motion Control
23	RS-485 I/O
24	Ethernet I/O
25	Building Automation
26	Self-service Terminals
27	eHome Platforms

# ADAM-5080

# ADAM-5081

## 4-ch Counter/Frequency Module

## 4-ch High Speed Counter/Frequency Module



ADAM-5080



### Specifications

#### General

- **Certifications** CE, FM
- **Connectors** 1 x Plug-in screw terminal (# 14 ~ 22 AWG)
- **Enclosure** ABS+PC
- **Power Consumption** 1.5 W (max.)

#### Counter/Frequency

- **Counter Aux. Function** Initial preset, hi-low alarm setting, alarm digital output mapping, overflow
- **Channels** 4
- **Input Frequency** 0.3 ~ 1,000 Hz max. (frequency mode)  
5,000 Hz max. (counter mode) TTL only
- **Input Level** Isolated or TTL level
- **Isolation Input Level** Logic level 0: 1 V<sub>max</sub>  
Logic level 1: 3.5 ~ 30 V
- **Isolation Voltage** 1,000 V<sub>RMS</sub>
- **Maximum Count** 4,294,967,295 (32 bits)
- **Minimum Input Current** 2 mA (isolated)
- **Minimum Pulse Width** 500 μs (frequency mode)  
100 μs (counter mode)
- **Modes** Counter (up/down, bi-direction), Frequency
- **Programmable Digital Filter** 1 ~ 65,000 μsec (Noise Filter Function)
- **TTL Input Level** Logic level 0: 0 ~ 0.8 V  
Logic level 1: 2.3 ~ 5 V

**Note:** Does not support ADAM-5550 Series

### Ordering Information

- **ADAM-5080** 4-ch Counter/Frequency Module



ADAM-5081



### Specifications

#### General

- **Certifications** CE
- **Power Consumption** 1.1 W (Max.)
- **Enclosure** ABS+PC
- **LED** Power/Communication Indicator

#### Counter/Frequency

- **Channels** 4
- **Maximum Count** 4,294,967,295 (32 bit)
- **Input Frequency** 5 Hz ~ 1 MHz max. (frequency mode)  
1 MHz max. (counter mode)
- **Input Level** Isolated or TTL level
- **Minimum Pulse Width** 1μsec. (frequency mode)  
1μsec. (counter mode)
- **Minimum Input Current** 2 mA (isolated)
- **Isolation Input Level** Logic level 0: +3 Vdc (max),  
Logic level 1: +10 Vdc to 30 Vdc
- **TTL Input Level** Logic level 0: 0 Vdc to 0.8 Vdc,  
Logic level 1: 2.3 Vdc to 5 Vdc
- **Isolation voltage** 2,500 V<sub>RMS</sub>
- **Modes** Counter (up/down, bi-direction, up, A/B Phase),  
Frequency
- **Counter Aux. Function** Initial preset, hi-low alarm setting, alarm digital output mapping, overflow
- **Programmable Digital Filter** 1 ~ 65,000 μsec (Noise Filter Function)

#### Note:

For ADAM-5550 Series, ADAM-5000/485, ADAM-5000E, ADAM-5000/TCP, ADAM-5510M, ADAM-5510/TCP and ADAM-5510E/TCP.

### Ordering Information

- **ADAM-5081** 4-ch High Speed Counter/Frequency Module

# ADAM-5202 ADAM-5240 ADAM-5030

## 2-port AMONet Master Module 4-axis Stepping/Pulse-type Servo Motor Control Module

## 2-slot SD Storage Module



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Power Consumption** 0.5 W (Max.)
- **Enclosure** ABS+PC
- **Connectors** RJ-45
- **LED Indicators** Active, Error (Each Port)

#### Motion

- **Number of Rings** 2
- **Transmission Speed** 2.5, 5, 10 or 20 Mbps with automatic data flow control
- **Serial Interface** Half duplex RS-485 with transformer isolation
- **Cable Type** CAT5 UTP/STP Ethernet cable
- **Surge Protection** 10 kV
- **Communication** Max. 100 m (20 Mbps/32 slave modules) or 50 m (20 Mbps/64 slave modules) Distance
- **Communication Slave** 2 Rings with Max. 128 (1 Ring with 64 slaves) Module Number

Note: only for ADAM-5550 Series

### Ordering Information

- **ADAM-5202** 2-ring AMONet Master Module



### Specifications

#### General

- **Certifications** CE
- **Power Consumption** 1.1 W (Max.)
- **Enclosure** ABS+PC
- **Connectors** 100-pin SCSI-II female

#### Motion

- **Number of Axis** 4 Axis
- **External Power input** DC +12 ~ 24 Vdc  
2/3-axis Linear Interpolation/  
2-axis Circular Interpolation  
±2, 147, 483, 646 for each axis  
1PPS ~ 4MPPS
- **Range**
- **Speed**

#### Continuous Interpolation

- **Speed** 1PPS ~ 2MPPS

#### Drive Output Pulses

- **Range** 1PPS ~ 4MPPS
- **Pulse Output Type** Pulse/Direction  
(1-pulse, 1- direction type)  
Up/Down (2-pulse type)  
T/S-curve Acceleration/  
Deceleration
- **Speed Curve**

#### Input Pulse for Encoder Interface

- **Encoder Pulse Input Type** Quadrature (A/B phase or Up/Down)
- **Counts per Encoder Cycle** X1, X2, X4 (A/B phase only)
- **Protection** 1,000 Vdc isolation
- **Input Range** 5 V ~ 30 V

#### External Deceleration/Instantaneous Stop Signal

- **Input Signal** nIN1 ~ 3
- **Max Input Frequency** 4 kHz
- **Protection** 1,000 Vdc Photo coupler isolation

#### Input Pulse for Servo Motor Drives

- **Input Signal** nALArm (servo alarm)  
nINPOS (position command completed)

#### General Purpose Output Signal

- **Output Signal** nOUT4 ~ 7

#### Emergency Stop

- **Input Signal** EMG -- one emergency stop input for ADAM-5240
- **Protection** 1000 Vdc Photo coupler isolation and RC filtering

Note: only for ADAM-5550 Series

### Ordering Information

- **ADAM-5240** 4-axis Stepping/Pulse Servo Motor Control Module
- **ADAM-3952** 50-pin DIN-rail SCSI Wiring Board
- **PCL-101100M-1** 100-pin SCSI Cable, 1 m
- **PCL-101100M-3** 100-pin SCSI Cable, 3 m
- **PCL-10251-1** 100-pin SCSI to Two 50-pin SCSI Cable, 1 m
- **PCL-10251-2** 100-pin SCSI to Two 50-pin SCSI Cable, 2 m
- **PCL-10251-3** 100-pin SCSI to Two 50-pin SCSI Cable, 3 m



### Specifications

#### General

- **Certifications** CE, FCC class A
- **Enclosure** ABS+PC
- **Power Consumption** 0.5 W (Max)

#### Storage

- **Storage Type** SD (Secure Digital Card)
- **Storage Number** 2
- **USB Type** USB Rev 2.0 (Compliant)
- **USB Number** 2
- **Operating Temperature** 0 ~ 55° C (32 ~ 131° F)
- **Max Storage** 1 GB x 2
- **Format** FAT-16
- **Interface** PCI Bus

Note: only for ADAM-5550 Series

### Ordering Information

- **ADAM-5030** 2-slot SD Storage Module

19	Embedded Controllers
20	PC-based Controllers
21	PAC
22	Motion Control
23	RS-485 I/O
24	Ethernet I/O
25	Building Automation
26	Self-service Terminals
27	eHome Platforms

# PWR-242

# PWR-243

DIN-rail Power Supply

Panel Mount Power Supply



PWR-242



## Specifications

### Input

- Input Current: 1.2 A max.
- Inrush Current (cold): 20 A/110 V<sub>AC</sub>  
40 A/220 V<sub>AC</sub>
- Input Frequency: 47 ~ 63 Hz
- Input Voltage: 90 ~ 264 V<sub>AC</sub> wide input range
- Short Protection

### Output

- Output Current: 2.1 A max.
- Output Voltage: +24 V<sub>DC</sub> ±10%
- Overload Protection

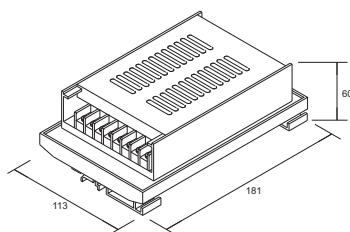
### General

- Certifications: CE, FCC, UL
- Connectors: Screw-terminal
- Dimensions (L x W x H): 181 x 113 x 60 mm (7.01" x 4.43" x 2.35")
- Enclosure: Sheet metal
- MTBF: 85,000 hrs
- Operating Temperature: 0 ~ 50° C (32 ~ 122° F)

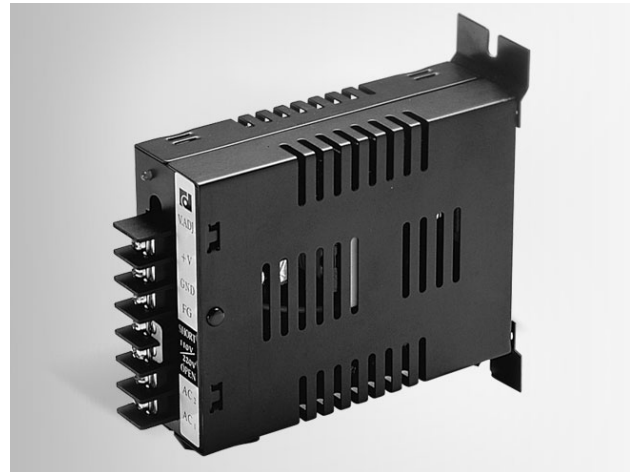
## Ordering Information

- PWR-242: DIN-rail Power Supply

## Dimensions



Unit: mm



PWR-243



## Specifications

### Input

- Input Current: 1.4 A max.
- Inrush Current (cold): 20 A/110 V<sub>AC</sub>  
40 A/220 V<sub>AC</sub>
- Input Frequency: 47 ~ 63 Hz
- Input Voltage: 85 ~ 132 V<sub>AC</sub> or 170 ~ 264 V<sub>AC</sub>, (switchable)
- Short Protection

### Output

- Output Current: 3 A max.
- Output Voltage: +24 V<sub>DC</sub> ±10%
- Overload Protection

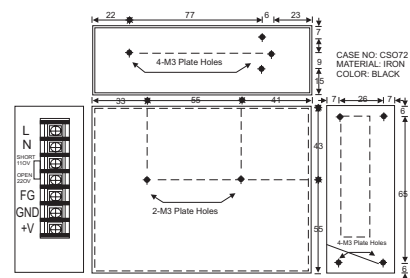
### General

- Certifications: CE, FCC, UL
- Connectors: Screw-terminal
- Dimensions (L x W x H): 128 x 97 x 40 mm (5" x 3.8" x 1.6")
- Enclosure: Sheet metal
- MTBF: 78,000 hrs
- Operating Temperature: 0 ~ 50° C (32 ~ 122° F)

## Ordering Information

- PWR-243: Panel Mount Power Supply

## Dimensions



Unit: mm

# PWR-244 PWR-343

## Panel Mount Power Supply

## Power Supply Module



PWR-244



### Specifications

#### Input

- **Input Current** 1.4 A max.
- **Inrush Current (cold)** 25 A/110 V<sub>AC</sub>  
50 A/220 V<sub>AC</sub>
- **Input Frequency** 47 ~ 63 Hz
- **Input Voltage** 100 ~ 240 V<sub>AC</sub>
- **Short Protection**

#### Output

- **Output Current** 4.2 A max.
- **Output Voltage** +24 V<sub>DC</sub> ±10%
- **Overload Protection**

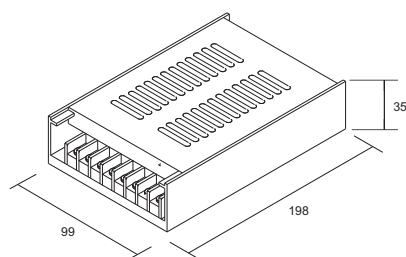
#### General

- **Certifications** CE, FCC, UL
- **Connectors** Screw-terminal
- **Dimensions (L x W x H)** 198 x 99 x 35 mm (7.80" x 3.90" x 1.38")
- **Enclosure** Sheet metal
- **MTBF** 70,000 hrs
- **Operating Temperature** 0 ~ 50° C (32 ~ 122° F)

### Ordering Information

- **PWR-244** Panel Mount Power Supply

### Dimensions



Unit: mm



PWR-343



### Specifications

#### Input

- **Rated Voltage** 115/230 V<sub>AC</sub>
- **Voltage Range** 90 ~ 264 V<sub>AC</sub>
- **Rated Input Current** 1.5 A (at rated load)
- **Rated Input Frequency** 50/60 Hz
- **Input Frequency Range** 47 ~ 63 Hz
- **Inrush Current Limit** < 50 A

#### Output

- **Output Power** 72 W
- **Power Loss** about 8~9 W (at rated load)
- **Efficiency** > 88% (at rated load)
- **Rated Voltage** 24 V<sub>DC</sub>
- **Rated Output Current** 3 A
- **Output Current Limit** 3.5 ~ 4.3 A
- **Residual Ripple** < 240 mVpp
- **Startup Delay** < 3 second
- **Voltage Rise** 60 ms (typical)

#### Protection

- **Isolation Protection (In/Out)** 4242 V<sub>DC</sub>
- **Over Voltage Protection** 26 ~ 29 V<sub>DC</sub>, Latch off mode
- **Over Load Protection** auto-recovery mode
- **Short Circuit Protection** auto-recovery mode

#### General

- **Certifications** CE, FCC Class A, UL 508, Energy Star
- **Dimensions (W x H x D)** 60 x 151 x 115 mm
- **Enclosure** PC
- **Operating Temperature** 0 ~ 50° C (when mounted vertically)
- **Storage Temperature** -20 ~ 75° C
- **Humidity** 5 ~ 95% (non-condensing)
- **Mounting** DIN-rail, wall mount (panel mount)

### Ordering Information

- **PWR-343** Standalone Power Supply

19

Embedded Controllers

20

PC-based Controllers

21

PAC

22

Motion Control

23

RS-485 I/O

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Ethernet I/O

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